DVP-K330

RMT-D108E

SERVICE MANUAL

Chinese Model
Hong Kong Model
Singapore Model
Taiwan Model

Self Diagnosis Supported model

SPECIFICATIONS

CD/DVD player

Laser Semiconductor laser
Signal format system
NTSC/PAL (See page 9 to switch.)

Audio characteristics

Frequency response
DVD (PCM 96 kHz): 2 Hz to 44 kHz (±1 dB)*
DVD (PCM 48 kHz): 2 Hz to 22 kHz (±0.5 dB)
CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio
More than 110 dB (LINE OUT (AUDIO 1, 2) connectors only)
Harmonic distortion
Less than 0.0025%
Dynamic range
More than 100 dB (DVD)
More than 97 dB (CD)
Wow and flutter
Less than detected value (±0.001% W PEAK)

Outputs and inputs

	Jack type	Output level	Load impedance
LINE OUT (AUDIO 1, 2)	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 Vp-p	75 ohms terminated
LINE OUT (VIDEO 1, 2)	Phono jacks	1.0 Vp-p	75 ohms, sync negative
S VIDEO OUT (1, 2)	4-pin mini DIN	Y: 1.0 Vp-p C: 0.3 Vp-p (PAL) C: 0.286 Vp-p (NTSC)	75 ohms, sync negative 75 ohms terminated
COMPONENT VIDEO OUT (Y, CB/B-Y, CR/R-Y)	Phono jacks	Y: 1.0 Vp-p CB/B-Y, CR/R-Y: 0.7 Vp-p	75 ohms, sync negative 75 ohms
MIC 1, 2	Standard jacks		

General

Power requirements
220 to 240V AC, 50/60 Hz (EXCEPT Taiwan)
110V AC, 50/60 Hz (Taiwan)
Power consumption
15 W
Dimensions (approx.)
430 × 95 × 305 mm (w/h/d)
incl. projecting parts
Mass (approx.)
3.4 kg

– Continued on next page –

CD/DVD PLAYER

MICROFILM

SONY®

Operating temperature
5 °C to 35 °C
Operating humidity
5% to 90%

Supplied accessories

Check that you have the following items:
- Audio/video connecting cord (1)
- S video cord (1)
- Remote commander (remote) RMT-D108E (1)
- Size R6 (AA) batteries (2)

* *The signals from LINE OUT (AUDIO 1, 2) connectors are measured. When you play the PCM sound tracks with 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency).*

Design and specifications are subject to change without notice.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:
The use of optical instrument with this product will increase eye hazard.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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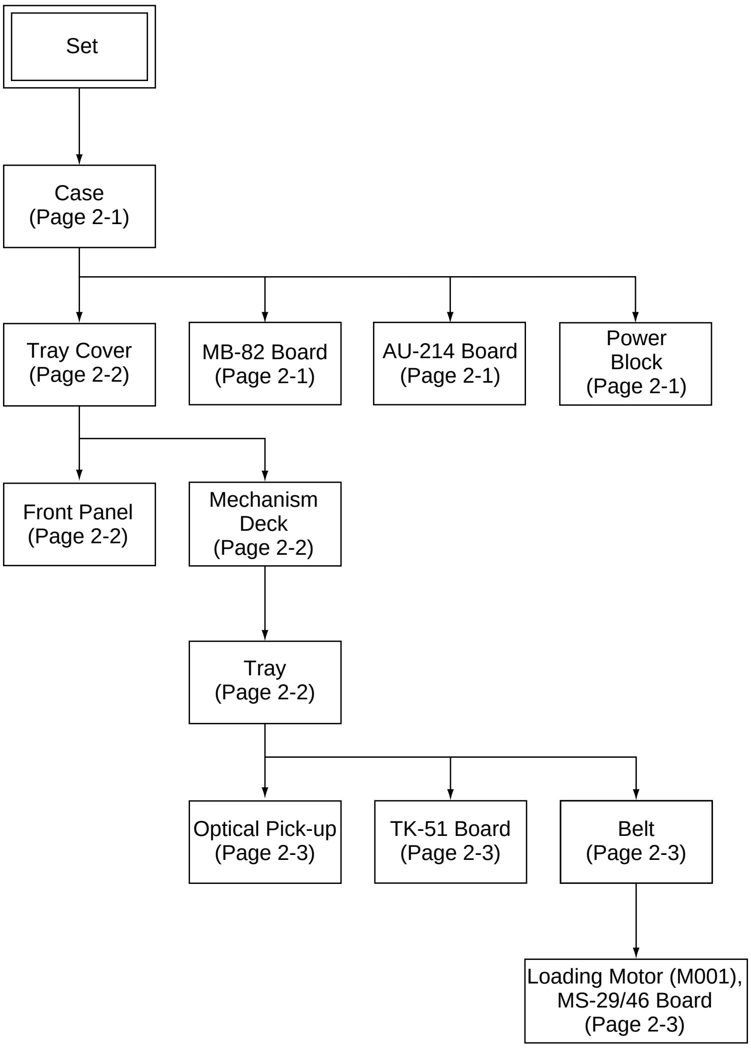
SERVICE NOTE

1. DISASSEMBLY

- This set can be disassembled in the order shown below.



2. NOTE ON REMOVE THE CASE

1) Remove seven screws. (See Fig. 1)
2) Open the side of case. (See Fig. 1)
3) Remove the case as lift straight. (See Fig. 1)

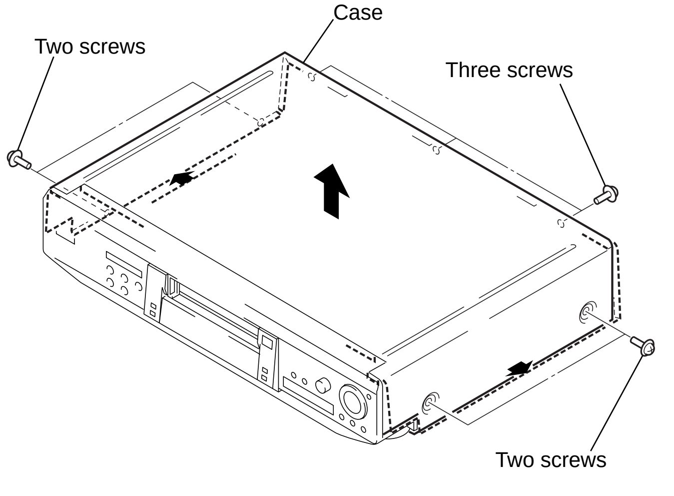


Fig. 1

3. DISC REMOVAL PROCEDURE (at POWER OFF)

1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow Ⓐ. (See Fig. 2)
2) Draw out the tray in the direction of the arrow Ⓑ, and remove a disc. (See Fig. 2)

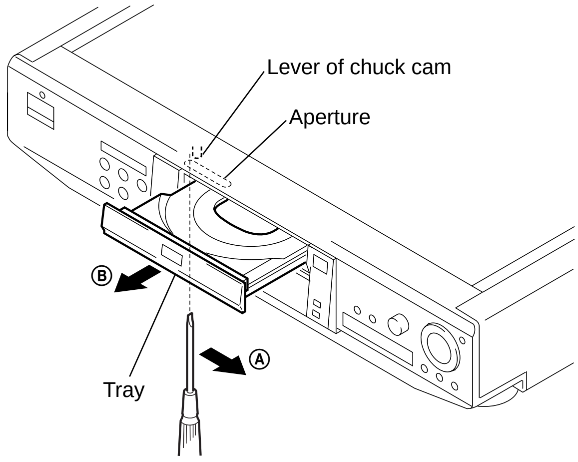


Fig. 2

4. HOW TO SERVICE MB-82 BOARD

1) Remove the case from the set. (Refer to 2-1)
2) Remove the MB-82 board. (Refer to 2-1)
3) Set the MB-82 board as shown in Fig. 3.
   Note: Do not disconnect wiring, except FMA-7/9/10.

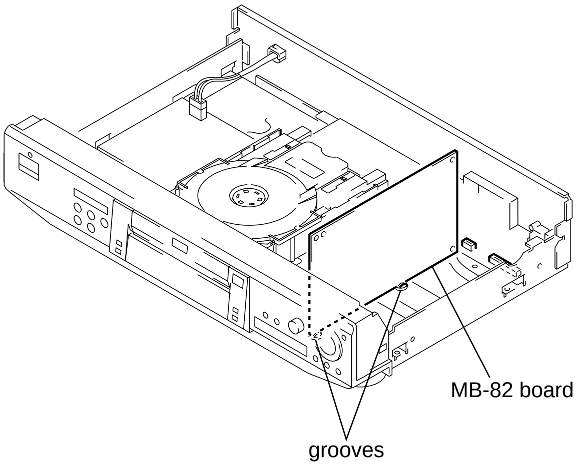


Fig. 3

SECTION 1
GENERAL

This section is extracted from instruction manual (3-866-505-11).

About This Manual

Conventions
- Instructions in this manual describe the controls on the player. You can also use the controls on the remote if they have the same or similar names as those on the player.
- The icons on the right are used in this manual:

Icon	Meaning
(remote icon)	Indicates that you can use only the remote to do the task.
(tip icon)	Indicates tips and hints for making the task easier.
DVD	Indicates the functions for DVD VIDEOs.
VIDEO CD	Indicates the functions for VIDEO CDs.
CD	Indicates the functions for Audio CDs.

This Player Can Play the Following Discs

	DVD VIDEOs		VIDEO CDs		Audio CDs	
Disc logo	DVD VIDEO		COMPACT disc DIGITAL VIDEO		COMPACT disc DIGITAL AUDIO TEXT	
Contents	Audio + Video		Audio + Video		Audio	
Disc size	12 cm	8 cm	12 cm	8 cm	12 cm	8 cm (CD single)
Play time	About 4 h (for single-sided DVD)/ about 8 h (for double-sided DVD)	About 80 min. (for single-sided DVD)/ about 160 min. (for double-sided DVD)	74 min.	20 min.	74 min.	20 min.

"DVD VIDEO" logo is a trademark.

This player switches the color system, PAL or NTSC, according to the connected TV. (For details, see page 9.)

Region code of DVDs you can play on this unit

Your DVD player has a region code printed on the back of the unit and will only play DVDs that are labeled with identical region codes.

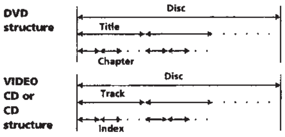
DVDs labeled ALL will be also played on this unit.

If you try to play any other DVD, the message "Playing this disc prohibited by area limits." will appear on the TV screen.

Depending on the DVD, no region code indication may be labeled even though playing the DVD is prohibited by the area limits.

Note on playback operations of DVDs and VIDEO CDs
Some playback operations of DVDs and VIDEO CDs may be intentionally fixed by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs or VIDEO CDs.

Terms for discs
- **Title**
  The longest sections of a picture or a music piece on a DVD; a movie, etc., for a picture piece on a video software; or an album, etc., for a music piece on an audio software. Each title is assigned a title number enabling you to locate the title you want.
- **Chapter**
  Sections of a picture or a music piece that are smaller than titles. A title is composed of several chapters. Each chapter is assigned a chapter number enabling you to locate the chapter you want. Depending on the disc, no chapters may be recorded.
- **Track**
  Sections of a picture or a music piece on a VIDEO CD or a CD. Each track is assigned a track number enabling you to locate the track you want.



- **Index (CD) / Video Index (VIDEO CD)**
  A number that divides a track into sections to easily locate the point you want on a VIDEO CD or a CD. Depending on the disc, no indexes may be recorded.
- **Scene**
  On a VIDEO CD with PBC functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes." Each scene is assigned a scene number enabling you to locate the scene you want.

Note on PBC (Playback Control) (VIDEO CDs)
This player conforms to Ver. 1.1 and Ver. 2.0 of VIDEO CD standards. You can enjoy two kinds of playback according to the disc type.

Disc type	You can
VIDEO CDs without PBC functions (Ver. 1.1 discs)	Enjoy video playback (moving pictures) as well as music.
VIDEO CDs with PBC functions (Ver. 2.0 discs)	Play interactive software using menu screens displayed on the TV screen (PBC Playback), in addition to the video playback functions of Ver 1.1 discs. Moreover, you can play high-resolution still pictures, if they are included on the disc.

Discs that the player cannot play
The player cannot play discs other than the ones listed in the table on page 4. CD-R, CD-ROMs including PHOTO CDs, data sections in CD-EXTRAs, DVD-ROMs etc., cannot be played.

When playing DTS*-encoded CDs, excessive noise will be heard from the analog stereo outputs. To avoid possible damage to the audio system, the consumer should take proper precautions when the analog stereo outputs of the DVD player are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel DTS Digital Surround™ decoder system must be connected to the digital output of the DVD player.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

* "DTS" is a trademark of Digital Theater Systems, Inc.

Precautions

On safety
- Caution – The use of optical instruments with this product will increase eye hazard.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources
- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
- Should the AC power cord (mains lead) need to be changed, have it done at a qualified service shop only.

On placement
- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes on the bottom.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust or mechanical shock.

On operation
- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.

On adjusting volume
- Do not turn up the volume while listening to a portion with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level portion is played.

On cleaning
- Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

IMPORTANT NOTICE
Caution: The enclosed DVD player is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Projection televisions are very susceptible.

Notes on Discs

On handling discs
- To keep the disc clean, handle the disc by its edge. Do not touch the surface.
- Do not stick paper or tape on the disc.
  If there is glue (or a similar substance) on the disc, remove the glue completely before using the disc.

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as there can be considerable rise in temperature inside the car.
- After playing, store the disc in its case.

On cleaning
- Before playing, clean the disc with a cleaning cloth. Wipe the disc from the center out.

- Do not use solvents such as benzine, thinner, commercially available cleaners or anti-static spray intended for vinyl LPs.

Getting Started

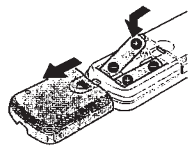
This section describes how to hook up the CD/DVD player to a TV (with audio/video input jacks) and/or an AV receiver (amplifier). You cannot connect this player to a TV which does not have a video input connector. Be sure to turn off the power of each component before making the connections.

Unpacking

Check that you have the following items:
- Audio/video connecting cord (1)
- S video cord (1)
- Remote commander (remote) RMT-D108E (1)
- Size R6 (AA) batteries (2)

Inserting batteries into the remote

You can control the player using the supplied remote. Insert two Size R6 (AA) batteries by matching the + and – on the batteries. When using the remote, point it at the remote sensor on the player.

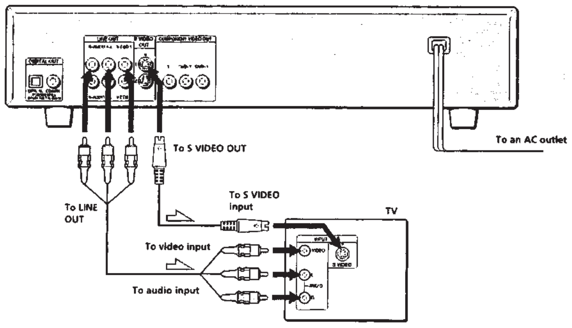


You can control TVs and AV receivers using the supplied remote
See page 57.

Notes
- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
- If you will not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

TV Hookups

This connection is for listening to the sound through TV speakers (2ch – L,R). Refer to the instructions supplied with the component to be connected.



: Signal flow

Required cords

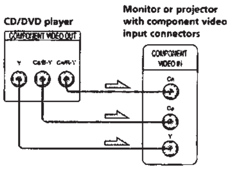
Audio/video connecting cord (supplied) (1)

S video cord (supplied) (1)

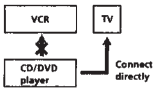
When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Yellow (video) to Yellow, Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.
If your TV has an S video input connector, connect the component via the S VIDEO OUT connector using the S video cord. You will get a better picture.
Refer to the instructions supplied with the TV to be connected.

If you connect the player to a monitor or projector having component video input connectors that conform to output signals from the COMPONENT VIDEO OUT (Y, CB/B-Y, CR/R-Y) connectors on the player

Connect the component via the COMPONENT VIDEO OUT connectors using three video connecting cords (not supplied) of the same kind. You will get a better picture.



Notes
- Refer to the instructions supplied with the component to be connected.
- Do not connect this player to a video deck. If you view the pictures on your TV after making the connections shown below, a picture noise may appear.



- Depending on the TV or receiver (amplifier), sound distortion may occur because the audio output level is high. In this case, set "AUDIO ATT" in "AUDIO SETUP" to "ON" in the setup display. For details, see page 54.

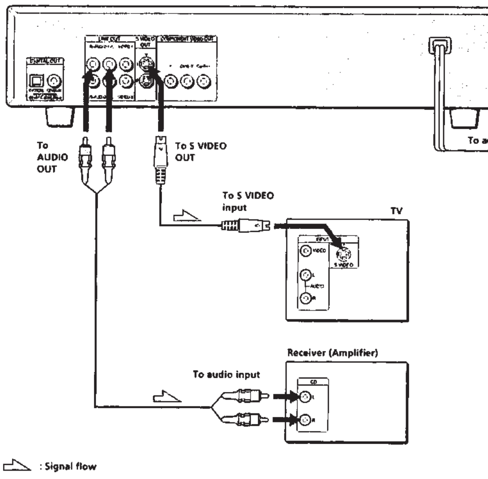
Setups for the player

Some setups are necessary for the player depending on the TV or other components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 46.

- **If the color system of the TV is NTSC or DUAL**
  Since the color system of the unit is set to NTSC, you can use the unit as it is.
- **If the color system of the TV is PAL**
  To set the unit to PAL, turn on the unit while pressing the ❚❚ button of the unit. To reset to NTSC, turn off the unit and then turn on as described above.
- **To connect the player to a wide-screen TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "16:9" (default setting). For details, see page 50.
- **To connect the player to a normal TV**
  In the setup display, set "TV TYPE" in "SCREEN SETUP" to "4:3 LETTER BOX" or "4:3 PAN SCAN." For details, see page 50.

Receiver (Amplifier) Hookups

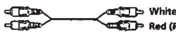
This connection is for listening to the sound through speakers connected to a receiver. Refer to the instructions supplied with the component to be connected.



: Signal flow

Required cords

Audio connecting cord (not supplied) (1)



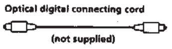
S video cord (supplied) (1)

When connecting the cords, be sure to match the color-coded cord to the appropriate jacks on the components: Red (right) to Red and White (left) to White. Be sure to make connections firmly to avoid hum and noise.

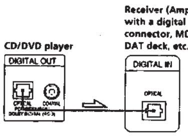
If you have a digital component such as a receiver (amplifier) with a digital connector, DAT or MD

Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied).
When you play a DVD, set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "D-PCM," "MPEG" to "PCM" and "DTS" to "OFF" in the setup display. (page 55)

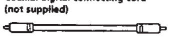
■ **When using an optical digital connecting cord**

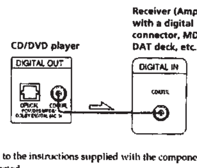


Take off the cap and plug in the optical digital connecting cord.



■ **When using a coaxial digital connecting cord**





Notes
- Refer to the instructions supplied with the component to be connected.
- You cannot make digital audio recordings of discs recorded in multi-channel surround format directly using an MD deck or DAT deck.

When you make the connections above, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL," "MPEG" to "MPEG" and "DTS" to "ON." If you do, a loud noise will suddenly come out from the speakers, affecting your ears or causing the speakers to be damaged.

If you have a digital component with a built-in DTS, Dolby Digital or MPEG decoder
You can enjoy multi-channel surround sound by connecting the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied). For details on hookups and settings, see page 12.

Setups for the player

Some setups are necessary for the player depending on the components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 46.

- **To listen to the sound through speakers connected to a receiver (amplifier) having a digital connector or to output the sound to a digital component such as a DAT or MD deck**
  When you play a DVD, set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "D-PCM," "MPEG" to "PCM" and "DTS" to "OFF" in the setup display (page 55). These are the default settings.

5.1 Channel Surround Hookups

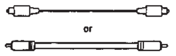
With DVDs which contain DTS, Dolby* Digital or MPEG AUDIO sound, you can enjoy the surround sound while producing the effect of being in a movie theater or a concert hall, using a digital component with a built-in DTS, Dolby Digital or MPEG decoder (not supplied). The player outputs the surround sound signals from the DIGITAL OUT OPTICAL and COAXIAL connectors.

Note
When a DVD has a sound track with 7.1 channels recorded in MPEG AUDIO format, the output audio signals are mixed down to 5.1 channels.

Required cords

Audio cords (not supplied)
One for the LINE OUT AUDIO jacks

Optical or coaxial digital cord (not supplied)
One for the DIGITAL OUT jacks



S video cord (supplied)
One for the S VIDEO OUT jacks

Connect the component via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord (not supplied). You do not need to connect both of these cords. See the figure on the next page.

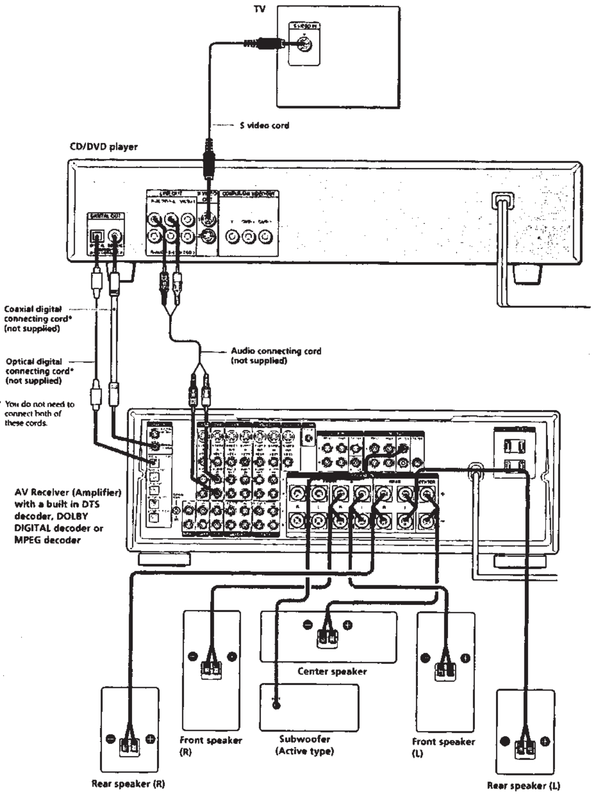
Notes
- Do not connect the power cord to an AC outlet or press the POWER switch before completing all connections.
- Refer to the instructions supplied with the component to be connected.
- The cord connectors should be fully inserted into the jacks. Loose connection may cause hum and noise.
- Jacks and plugs of the connecting cords are color-coded as follows:
  Red jacks and plugs: Right audio channel
  White jacks and plugs: Left audio channel

Setups for the player

Some setups are necessary for the player depending on the components to be connected.
Use the setup display to change the various settings.
For details on using the setup display, see page 46.

- **When you play a DVD or CD that are recorded in DTS format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DTS" to "ON" in the setup display. (page 56)
- **When you play a DVD that is recorded in Dolby Digital format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "DOLBY DIGITAL" to "DOLBY DIGITAL" in the setup display. (page 55)
- **When you play a DVD that is recorded in MPEG format**
  Set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "MPEG" to "MPEG" in the setup display. (page 56)

Notes
- Refer to the instructions supplied with the component to be connected.
- **When you do not connect an audio component with a built in DTS decoder, do not set "DTS" to "ON."**
- **When you do not connect an audio component with a built in DOLBY DIGITAL decoder, do not set "DOLBY DIGITAL" to "DOLBY DIGITAL."**
- **When you do not connect an audio component with a built in MPEG decoder, do not set "MPEG" to "MPEG."**



* Manufactured under license from Dolby Laboratories. "Dolby", "AC-3", "Pro Logic" and the double-D symbol DD are trademarks of Dolby Laboratories.
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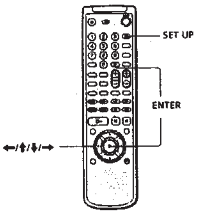
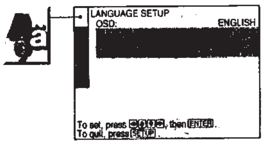
Selecting the Language for On-Screen Display

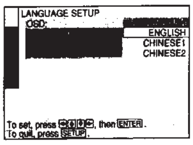
You can select the language for the setup display, the Control Menu display or the messages displayed on the screen. Default setting is "ENGLISH."



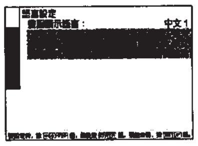
1 Press SET UP and select "LANGUAGE SETUP" using ↑/↓, and then press ENTER.



2 Select "OSD" using ↑/↓, then press → or ENTER.



3 Select "CHINESE1" or "CHINESE2" using ↑/↓, then press ENTER.



To cancel using the setup display on the way
Press SET UP.

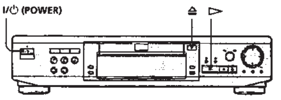
Note
The languages you can select are the ones displayed in step 2. For details, see page 49.

Playing Discs

This chapter describes how to play a DVD/CD/VIDEO CD.

Playing Discs DVD VIDEO CD CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the instructions supplied with your disc.

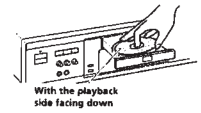


1 Make settings on your TV.
Turn on the TV and select the video input so that you can view the pictures from this player.

When using a receiver (amplifier)
Turn on the receiver (amplifier) and select the appropriate position so that you can listen to the sound from this player.

2 Press I/⏻ (POWER) to turn on the player.
The indicator (red) above the I/⏻ (POWER) button changes to green and the front panel display lights up.

3 Press ≙, and place the disc on the disc tray.

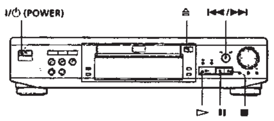


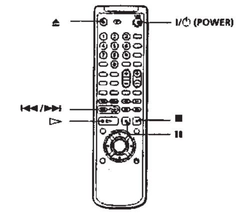
4 Press ▷.
The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the receiver (amplifier).

After following Step 4
■When playing a DVD
A DVD menu or title menu may appear on the TV screen (see page 19).
■When playing a VIDEO CD
The menu screen may appear on the TV screen depending on the VIDEO CD. You can play the disc interactively, following the instructions on the menu screen. (PBC Playback, see page 20.)

💡 **You can turn on the player using the remote**
Press I/⏻ (POWER) when the indicator above the I/⏻ (POWER) button on the front panel is lit in red.

Notes
- If you leave the player or the remote in pause or stop mode for 15 minutes, the screen saver image appears automatically. To make the screen saver image go away, press ▷. (If you want to set the screen saver function to off, see page 50.)
- The indicator above the I/⏻ (POWER) button lights up in red when the power is turned off.
- If you don't operate the player or the remote for more than 30 minutes when a disc is not being played, the power is automatically turned off. (Auto Power Off function)



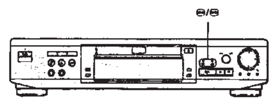


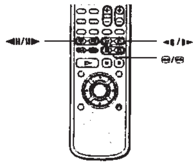
To	Operation
Stop	Press ■.
Pause	Press II.
Resume play after pause	Press II or ▷.
Go to the next chapter, track or scene in continuous play mode	On the player: Turn ⏮/⏭ clockwise to select the chapter. On the remote: Press ⏭.
Go back to the preceding chapter, track or scene in continuous play mode	On the player: Turn ⏮/⏭ counterclockwise to select the chapter. On the remote: Press ⏮.
Stop play and remove the disc	Press ⏏.

You can play discs in various modes such as Program Play using the on-screen menu (Control Menu). For operations of Control Menu, see page 23.

Searching for a particular point on a disc DVD VIDEO CD CD

You can locate a particular point on a disc by monitoring the picture, playing back slowly or playing frame by frame.





Note
Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly by playing a disc fast forward or fast reverse (Speed scan)

Press ⏪ or ⏩ while playing a disc. When you find the point, press ▷ to return to the normal speed.
Each time you press the ⏪ or ⏩ button during Speed scan, the playback speed changes. Two speeds are available. With each press, the indication changes as follows:

FF 1▶▶ ↔ FF 2▶▶ (playback direction)
FR 1◀◀ ↔ FR 2◀◀ (opposite direction)

The playback speed of FF2▶▶/FR2◀◀ is faster than FF1▶▶/FR1◀◀.

Locating a point slowly by observing the screen (Slow-motion play) DVD VIDEO CD

You can use this function only for DVDs or VIDEO CDs.
Press ◀I or I▶ while playing a disc. When you find the point, press ▷ to return to the normal speed.
Each time you press the ◀I or I▶ button during Slow-motion play, the playback speed changes. Two speeds are available. With each press, the indication changes as follows:

SLOW 1I▶ ↔ SLOW 2I▶ (playback direction)
SLOW 1◀I ↔ SLOW 2◀I (opposite direction – DVD only)

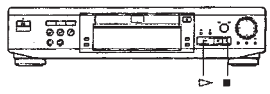
The playback speed of SLOW2I▶ /SLOW2◀I is slower than SLOW1I▶ /SLOW1◀I.

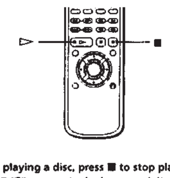
Playing a disc frame by frame DVD VIDEO CD

You can use this function only for DVDs or VIDEO CDs.
Press ◀II or II▶ while playing a disc. To return to normal playback, press ▷.

Resuming Playback from the Point Where You Stopped the Disc (Resume Play) DVD VIDEO CD CD

The player stores the point where you stopped the disc and if "RESUME" appears on the front panel display. You can resume playback from that point.
As long as you do not open the disc tray, Resume Play is available even if you turn the power off.





1 While playing a disc, press ■ to stop playback.
"RESUME" appears in the front panel display and "When playing next time, disc restarts from point you stopped." appears on the TV screen.
If "RESUME" does not appear, Resume Play is not available.

2 Press ▷.
The player starts playback from the point where you stopped the disc in Step 1.

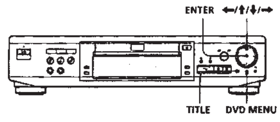
💡 **To play from the beginning of the disc**
When the playing time appears on the front panel display before you start playing, press ■ to reset the playing time, then press ▷.

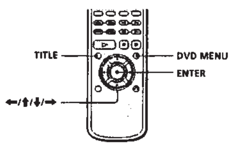
Notes
- Resume Play may not be available depending on the DVD.
- Resume Play is not available in Shuffle or Program Play mode.
- Depending on where you stopped the disc, the player may resume playback from a different point.
- The point where you stopped playing is cleared when:
  - you open or close the disc tray
  - you disconnect the AC power cord
  - you change the play mode
  - you start playback after selecting a title, chapter or track
  - you change the settings of "TV TYPE" in "SCREEN SETUP" in the setup display
  - you change the settings of "PARENTAL CONTROL" in "CUSTOM SETUP" in the setup display

Using the Menu for Each DVD DVD

Using the title menu

A DVD is divided into long sections of a picture or a music piece called "titles." When you play a DVD which contains several titles, you can select the title you want using the title menu.





1 Press TITLE.
The title menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ to select the title you want to play.
Depending on the disc, you can use the number buttons to select the title.

3 Press ENTER.
The player starts playing the selected title.

Notes
- Depending on the DVD, you may not be able to select the title.
- Depending on the DVD, a "title menu" may simply be called a "menu" or "title " in the instructions supplied with the disc. "Press ENTER." may also be expressed as "Press SELECT."

Using the DVD menu

Some DVDs allow you to select the disc contents using the menu. When you play these DVDs, you can select the language for the subtitles, the language for the sound, etc., using the DVD menu.

1 Press DVD MENU.
The DVD menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/↑/↓/→ to select the item you want to change.
Depending on the disc, you can use the number buttons to select the item.

3 To change other items, repeat Step 2.

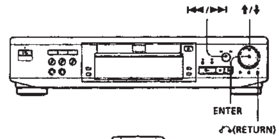
4 Press ENTER.

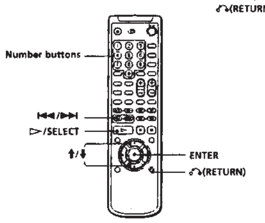
💡 **If you want to select the language for the DVD menu**
Change the setting using "LANGUAGE SETUP" in the setup display. For details, see page 49.

Note
Depending on the DVD, a "DVD menu" may simply be called a "menu" in the instructions supplied with the disc.

Playing VIDEO CDs with PBC Functions (PBC Playback)

When playing VIDEO CDs with PBC functions (Ver. 2.0 discs), you can enjoy simple interactive operations, operations with search functions, etc.
PBC Playback allows you to play VIDEO CDs interactively, following the menu screen on the TV screen.
On this player, you can use the number buttons, ENTER, ⏮, ⏭, ↑/↓ and ↶(RETURN) during PBC Playback.





1 **Start playing a VIDEO CD with PBC functions, following Steps 1 to 4 in "Playing Discs" on page 15.**

2 **Select the item number you want.**
On the player
Press ↑/↓ to select the item number.
On the remote
Press the number button of the item you want.

3 **Press ENTER.**

4 **Follow the instructions on the menu screen for interactive operations.**
Refer to the instructions supplied with the disc, as the operating procedure may differ according to the VIDEO CD.

Going back to the menu screen
Press ↶, ⏮, or ⏭.

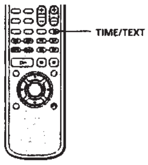
When playing VIDEO CDs with PBC functions
PBC playback starts automatically.

To cancel PBC playback of a VIDEO CD with PBC functions and play the disc in continuous play mode
There are two ways.
- Before you start playing, select the track you want using ⏮ or ⏭, then press ENTER or ▷.
- Before you start playing, select the track number using the number buttons on the remote, then press ENTER or ▷.
  "Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu screen.
  To return to PBC playback, press ■ twice then press ▷.

Note
Depending on the VIDEO CD, "Press ENTER" in Step 3 may be expressed as "Press SELECT" in the instructions supplied with the disc.

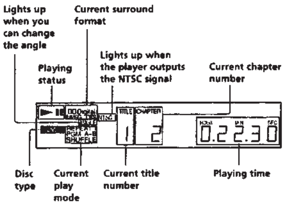
Using the Front Panel Display

You can check information about the disc, such as the total number of the titles or the tracks or remaining time, using the front panel display.

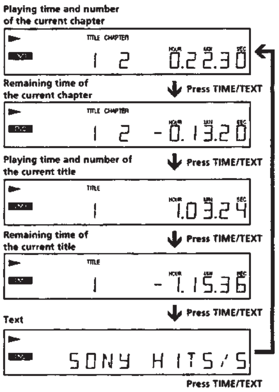


When playing back a DVD

Display information while playing the disc



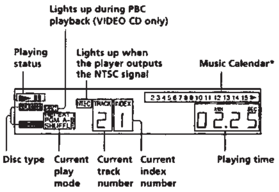
Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing the disc, the display changes as shown in the following chart.



Notes
- Depending on the DVD, the chapter number or time may not appear or you may not be able to change the front panel display.
- While you are doing Shuffle Play or Program Play, the playing time of the title and the remaining time of the title are not displayed.

When playing back a CD/VIDEO CD

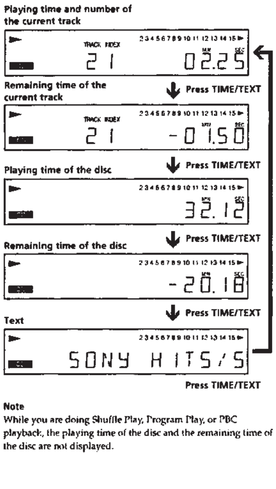
Display information while playing a disc



* Music Calendar shows the track number. "▶" indicates that the disc contains more than 15 tracks. The track numbers in the music calendar disappear after they are played.

When playing VIDEO CDs with PBC functions
The current scene number is displayed instead of the current track number and the current index number. In this case, the front panel display does not change when you press TIME/TEXT. If the TEXT is recorded on the disc, the front panel display changes to Text display when you press TIME/TEXT (see page 28).

Checking the remaining time
Press TIME/TEXT.
Each time you press TIME/TEXT while playing a disc, the display changes as shown in the following chart.



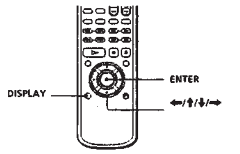
Note
While you are doing Shuffle Play, Program Play, or PBC playback, the playing time of the disc and the remaining time of the disc are not displayed.

Using Various Functions with the Control Menu

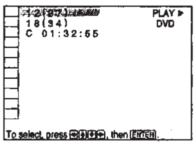
This chapter describes how to play discs in various modes and how to use the convenient features of the on-screen menu (Control Menu).

Using the Control Menu Display

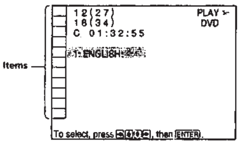
Using the Control Menu display, you can select the start point, play in a order you like, change the angles, etc.
The items are different depending on the kind of disc.
For details on each Control Menu display item, see pages 26 to 39.

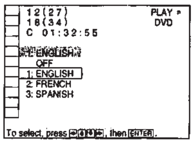


1 **Press DISPLAY to show the Control Menu display on the TV screen.**

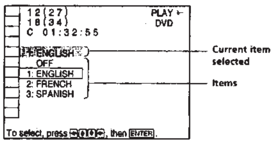


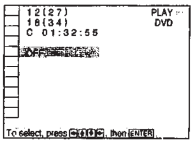
2 **Select the item you want using ↑/↓, then press ➡ or ENTER.**





3 **Select the item you want using ↑/↓, then press ➡ or ENTER.**





Note

Some Control Menu display items require operations other than selecting the setting. For details on these items, see the relevant pages.

To cancel using the Control Menu display on the way

Press ↶RETURN.

To display other items

Each time you press DISPLAY, the Control Menu display changes as follows:

→Control Menu display
↓
KARAOKE display (can be used only when the player is in karaoke mode.) (see page 39)
↓
ADVANCED display (see page 37)
↓
Control Menu display off

You can display some items using the remote

Some items can be displayed by pressing the button of the remote. In this case, only the item you selected is displayed. For the item and operations using the remote, see the pages of each item.

Control Menu Item List

TITLE (DVD only) (page 26)
CHAPTER (DVD only) (page 26)
TRACK (VIDEO CD/CD only) (page 26)
INDEX (VIDEO CD/CD only) (page 26)
SCENE (VIDEO CD during PBC playback only) (page 26)

You can search by selecting the title/chapter/track/index/scene.

TIME/TEXT (page 27, 28)

You can check the playing time and remaining time of the current ttitle/chapter/track and the total remaining time of the disc.
You can search by inputting the time code.
You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display.

AUDIO (page 29)

With DVDs recorded with multilingual sounds, you can select the language you want while playing the DVD. With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers.

SUBTITLE (DVD only) (page 31)

With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want.

ANGLE (DVD only) (page 31)

With DVDs on which various angles (multi-angles) are recorded, you can change the angles on the scene for which multi-angles are recorded.

PROGRAM (page 32)

You can play the contents of the disc in the order you want by arranging the order of the titles, chapters or tracks on the disc to create your own program.

SHUFFLE (page 34)

You can have the player "shuffle" titles, chapters or tracks and play them in a random order. The playing order may differ from the previous "shuffling."

REPEAT (page 35)

You can play all the titles/tracks on a disc or a single title/chapter/track repeatedly.

A-B REPEAT (page 36)

You can play a specific portion of a title, chapter, or track repeatedly.

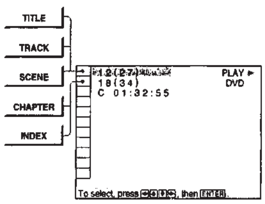
ADVANCED (DVD only) (page 37)

You can check the play information about the bit rate, bit rate history or the position where the disc is played (layer).

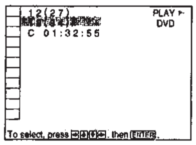
Searching for the Title/Chapter/Track/Index/Scene

DVD VIDEO CD CD

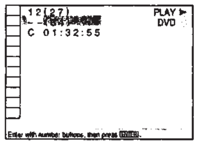
You can search by selecting the title/chapter/track/index/scene.
Select "TITLE," " CHAPTER," " TRACK", "INDEX" or "SCENE" after pressing DISPLAY.
When you play back a DVD, "TITLE" and " CHAPTER" are displayed.
When you play back a VIDEO CD/CD, "TRACK" and "INDEX" are displayed. When you play back a VIDEO CD with PBC functions, "SCENE" is displayed.



1 **Select "TITLE," "CHAPTER," "TRACK", "INDEX" or "SCENE" using ↑/↓.**
"＊＊(＊＊)" is highlighted. (＊＊ means optional number in this manual.) Number in parentheses indicate the total number of titles, chapters, tracks, indexes or scenes.



2 **Press ➡ or ENTER.**
"＊＊(＊＊)" is changed to "−− (＊＊)".



3 **Select the number of the title, chapter, track, index or scene you want to search for using the number buttons, then press ENTER.**
The player starts searching.
To cancel the number, press CLEAR before pressing ENTER.

To cancel selecting

Press ↶RETURN.

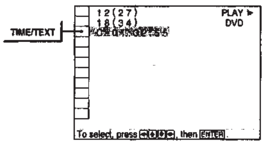
Notes

- The number of titles, chapters or tracks displayed is that of the titles, chapters or tracks recorded on a disc.
- The index numbers are not displayed during PBC playback of VIDEO CDs.

Checking the Playing Time and Remaining Time

DVD VIDEO CD CD

You can check the playing time and remaining time of the current title /chapter/track and the total remaining time of the disc.
Press DISPLAY to select "TIME/TEXT."
You can also check the DVD TEXT or CD TEXT. See page 28.



When playing a DVD

■TIME/TEXT

- C ＊＊:＊＊:＊＊: Playing time of the current chapter
- C −＊＊:＊＊:＊＊: Remaining time of the current chapter
- T ＊＊:＊＊:＊＊: Playing time of the current title
- T −＊＊:＊＊:＊＊: Remaining time of the current title

When playing a VIDEO CD (during PBC playback)

■TIME/TEXT

- ＊＊:＊＊: Playing time of the current scene

When playing a VIDEO CD (in continuous play) or CD

■TIME/TEXT

- T ＊＊:＊＊: Playing time of the current track
- T −＊＊:＊＊: Remaining time of the current track
- D ＊＊:＊＊: Playing time of the current disc
- D −＊＊:＊＊: Remaining time of the current disc

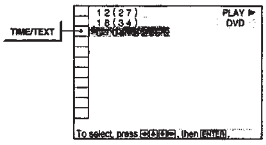
You can display "TIME/TEXT" display using the remote

Press TIME/TEXT on the remote. Each time you press the button, the time information changes.

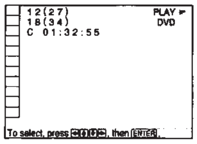
Selecting a Start Point Using the Time Code

DVD

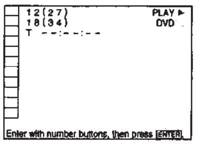
You can search by inputting the time code.
Press DISPLAY to select "TIME/TEXT."
The time code corresponds to the approximate actual playing time. For example, to search for a scene 2 hours 30 minutes 20 seconds past the beginning, input 2:30:20.



1 **Select "C ＊＊:＊＊:＊＊" (playing time of the current chapter) when playing a DVD.**



2 **Press ➡ or ENTER.**
Time code changes to "T−−:−−:−−".



3 Input the time code using the number buttons, then press ENTER.
The player starts searching.
To cancel the number, press CLEAR before pressing ENTER.

To cancel inputting
Press RETURN.

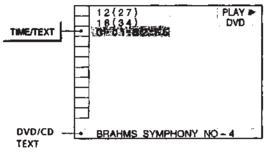
You can display "TIME/TEXT" display using the remote
Press TIME/TEXT on the remote.

Note
When you input the time code, input the playing time of the title.

Checking the Information of the Disc

DVD VIDEO CD CD

You can check the DVD TEXT or CD TEXT of the disc on the TV screen and the front panel display.
DVD TEXT and CD TEXT are information recorded on the disc which you cannot change.
Press DISPLAY to select "TIME/TEXT." Then press TIME/TEXT on the remote until DVD/CD TEXT is displayed.
The information is displayed at the bottom of the display.

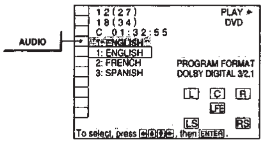


Note
The DVD TEXT only in English is displayed.

Changing the Sounds

DVD VIDEO CD CD

With DVDs recorded with multilingual sounds, you can select the language you want while playing the DVD.
With multiplex CDs or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. In this case, the sound loses the stereo effect. For example, with a disc containing a song, the right channel may output the vocals and the left channel may output the instrumental. If you only want to hear the instrumental, you can select the left channel and hear it from both speakers.
Select "AUDIO" after pressing DISPLAY.



■AUDIO
When playing a DVD
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they represent the language code. Select the language code from the list on page 66.

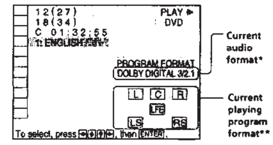
When playing a VIDEO CD or a CD
- STEREO : The standard stereo sound
- 1/L : The sound of the left channel (monaural)
- 2/R : The sound of the right channel (monaural)

You can display the "AUDIO" display using the remote
Press AUDIO on the remote.

Notes
- Depending on the DVD, you may not be able to change the languages even if multilingual sounds are recorded on the DVD.
- While playing the CD/VIDEO CD, the standard stereo playback will be resumed when:
  – you open or close the disc tray
  – you turn the power off
- While playing the DVD, the sound may be changed when:
  – you open or close the disc tray
  – you change the title
- If the language is displayed as a 4 digit number, refer to the language code list on page 66.

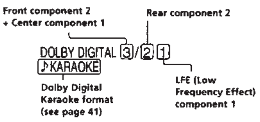
Displaying the audio information of the disc DVD

When you select "AUDIO," the playing channels are displayed on the screen.
In Dolby Digital format, the signals from monaural to 5.1 channels can be recorded on a DVD. Depending on the DVD the number of the recorded channels may be different.



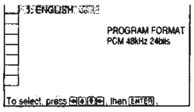
* "PCM," "DTS," "DOLBY DIGITAL" or "MPEG" is displayed. In "DOLBY DIGITAL" case, the channels in the playing track are displayed by number as follows:

The case of Dolby Digital 5.1 ch:

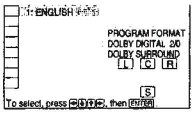


** The letters in the program format display mean the following:
L: Front (L)
R: Front (R)
C: Center (monaural)
LS: Rear (L)
RS: Rear (R)
S: Rear (monaural) – the rear component of the Dolby Surround processed stereo signal and the Dolby Digital signal.
LFE: LFE (Low Frequency Effects)

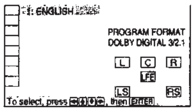
The display examples are as follows:
•PCM (stereo)



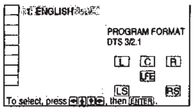
•Dolby Surround



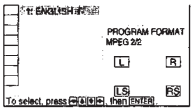
•Dolby Digital 5.1ch



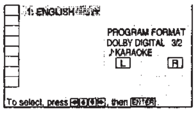
•DTS



•MPEG



•Dolby Digital Karaoke format
(For details, see page 41.)

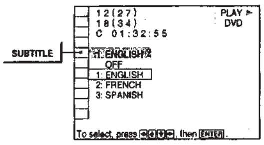


You can find Dolby Surround-encoded software by looking at the packaging
Use discs with the DOLBY SURROUND logo. In order to enjoy Dolby Digital playback, you must use discs bearing this logo.

Displaying the Subtitles

DVD

With DVDs on which subtitles are recorded, you can turn the subtitles on and off whenever you want while playing the DVD.
With DVDs on which multilingual subtitles are recorded, you can change the subtitle language whenever you want while playing the DVD, and turn it on or off whenever you want. For example, you can select the language you want to master and turn the subtitles on for better understanding.
Select "SUBTITLE" after pressing DISPLAY.



■SUBTITLE
Select the language. The languages you can select are different depending on the DVD. When 4 digits are displayed, they indicate the language code. Select the language code from the list on page 66.

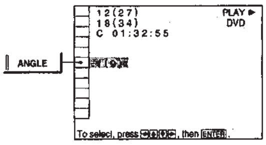
You can display the "SUBTITLE" display by using the remote
Press SUBTITLE on the remote. Each time you press the button, the item changes.

Notes
- When playing a DVD on which no subtitles are recorded, no subtitles appear.
- Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it.
- Depending on the DVD, you may not be able to turn the subtitles off.
- If the language is displayed as a 4-digit number, refer to the language code list on page 66.
- The type and number of languages for subtitles vary from disc to disc.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it.
- While playing the DVD, the subtitle may change when:
  – you open or close the disc tray
  – you change the title

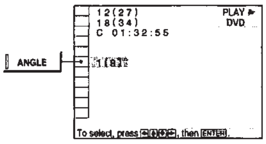
Changing the Angles

DVD

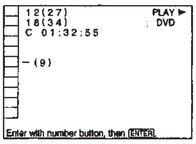
With DVDs on which various angles (multi-angles) for a scene are recorded, you can change the angles. For example, while playing a scene of a train in motion, you can display the view from either the front of the train, the left window of the train or from the right window without having the train's movement interrupted.
Select "ANGLE " after pressing DISPLAY. When the angles can be changed, the indicator of the "ANGLE " lights in green.



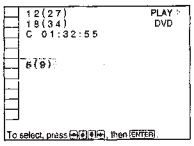
1 Select "ANGLE."



2 Press →.
The number of the angle changes to "–." The number in parentheses indicates the total number of angles.



3 Select the number of the angles using the number buttons or ↑/↓, then press ENTER.
The angle is changed to the selected angle.



Notes
- The number of angles varies from disc to disc or from scene to scene. The number of angles that can be changed on a scene is that of angles recorded for that scene.
- Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

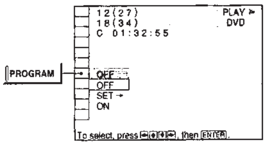
You can specify the angle beforehand
Specify the angle when "ANGLE" is not displayed on the front panel display. When a scene on which multi-angles are recorded comes, the angle is automatically selected.

You can select the angle using the remote
Press ANGLE on the remote. Each time you press the button, the angle changes.

Creating Your Own Program (Program Play)

DVD VIDEO CD CD

You can play the contents of the disc in the order you want by arranging the order of the titles, chapters or tracks on the disc and create your own program. One program can be restored in the player and contain up to 99 titles, chapters and tracks.
Select "PROGRAM" after pressing DISPLAY. When you select "ON", the indicator of the "PROGRAM" lights in green.

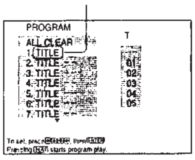


■PROGRAM
- OFF: plays normal.
- SET➡: allows you to create your own program.
- ON: plays Program Play.

Creating the program

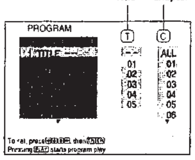
1 Select "SET➡" in "PROGRAM".
The programming display appears.

"TRACK" is displayed when you play a VIDEO CD or a CD.



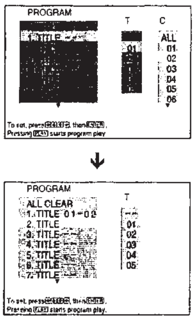
2 Press ➡.
"01" is highlighted. It is ready to set the first title or track for program.

Title **Chapter**



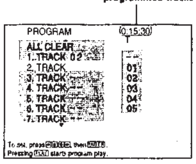
3 Select the title, chapter or track you want to program using ↑/↓, then press ENTER.
For example, select title or track 2.
(You can also use the number buttons and ENTER button to select. In this case, the selected number is displayed on the screen.)

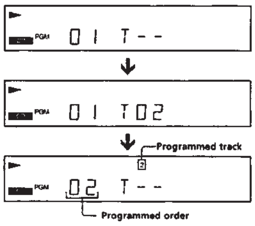
■When playing a DVD
When both titles and chapters are recorded on the disc, select the title, then the chapter.



■When playing a VIDEO CD or CD
Select the track you want to program.

Total time of the programmed tracks





4 To program other titles, chapters or tracks, repeat Step 3.
The programmed titles, chapters or tracks are displayed from 2 in order.

5 Press ▷ to start Program Play.

To cancel Program Play
Press CLEAR on the remote.

To cancel programming
Press PROGRAM on the remote.

To change programming
1 In Step 2, select the program number of the title, chapter or track you want to change using ↑/↓.
2 Follow Step 3 for new programming.

To cancel the programmed order
To cancel all the titles, chapters or tracks in the programmed order, select "ALL CLEAR" in Step 2.
To cancel the selected program, select the program using ↑/↓ in Step 2 then press CLEAR, or select "- -" in Step 3 then press ENTER.

The program remains even after the Program Play ends
When you press ▷, you can play the same program again.

You can do Repeat Play or Shuffle Play of the programmed titles, chapters or tracks
During Program Play, press REPEAT or SHUFFLE on the remote. Or set "REPEAT" or "SHUFFLE" to "ON" in the Control Menu display.

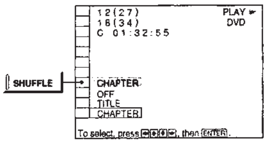
You can display "PROGRAM" display using the remote
Press PROGRAM on the remote.

Notes
- The number of titles, chapters or tracks displayed are that of the titles, chapters or tracks recorded on a disc.
- The program is canceled when:
  - you open or close the disc tray
  - you turn the power off
- You may not be able to do Program Play depending on the DVD.
- While you are doing PBC playback, you cannot set a program unless you stop playback once.

Playing in Random Order (Shuffle Play)

DVD VIDEO CD CD

You can have the player "shuffle" titles or tracks and play them in a random order. The playing order may differ from the previous "shuffling."
Select "SHUFFLE" after pressing DISPLAY. When you select "ON", the indicator of the "SHUFFLE " lights in green.



■SHUFFLE
Selects the setting of Shuffle Play.

When playing a DVD and when Program Play is set to OFF
- OFF: does not play a disc in random order.
- TITLE: has the player "shuffle" titles and play in a random order.
- CHAPTER: has the player "shuffle" chapters and play in a random order.

When playing a VIDEO CD, CD or DVD (when Program Play is set to ON)
- OFF: does not play a disc in random order.
- ON: has the player "shuffle" titles or tracks and play in a random order.

When playing a VIDEO CD or CD (when Program Play is set to OFF)
- OFF: does not play a disc in random order.
- TRACK: has the player "shuffle" tracks and play in a random order.

After selecting the item of "SHUFFLE", press ▷.
The player starts Shuffle Play.

To cancel Shuffle Play
Press CLEAR on the remote.

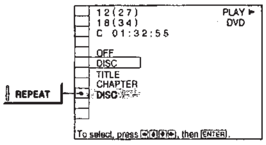
You can display the "SHUFFLE" display using the remote
Press SHUFFLE on the remote.

Notes
- Shuffle Play is canceled when:
  - you open or close the disc tray
  - you turn the power off
- You may not be able to do Shuffle Play depending on the DVD.
- Up to 200 chapters in a disc can be played in a random order when "CHAPTER" is selected.

Playing Repeatedly (Repeat Play)

DVD VIDEO CD CD

You can play all the titles/tracks on a disc or a single title/chapter/track.
In Shuffle or Program Play mode, the player repeats the titles or tracks in the shuffled or programmed order.
You cannot do Repeat Play during PBC playback of VIDEO CDs (page 20).
You may not be able to do Repeat Play depending on the DVD.
Select "REPEAT" after pressing DISPLAY. When you do not select "OFF," the indicator of the "REPEAT " lights in green.



■REPEAT
Selects the setting of Repeat Play.
When playing a DVD and when Program Play and Shuffle Play are set to OFF
- OFF: does not play repeatedly.
- DISC: repeats all the titles.
- TITLE: repeats the current title on a disc.
- CHAPTER: repeats the current chapter.

When playing a VIDEO CD/CD and when Program Play and Shuffle Play are set to OFF
- OFF: does not play repeatedly.
- DISC: repeats all the tracks on a disc.
- TRACK: repeats the current track.

When Program Play or Shuffle Play is set to ON
- OFF: does not play repeatedly.
- ON: repeats Program Play or Shuffle Play.

To cancel Repeat Play
Press CLEAR on the remote.

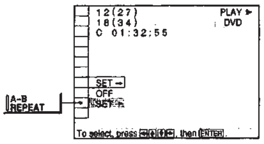
You can display the "REPEAT" display using the remote
Press REPEAT on the remote.

Note
Repeat play is canceled when you turn the power off.

Repeating a Specific Portion (A←→B Repeat)

DVD VIDEO CD CD

You can play a specific portion of a title, chapter, track repeatedly. This is useful when you want to memorize lyrics.
During PBC Playback of VIDEO CDs (page 20), this function is available only while playing moving pictures.
You may not be able to do A←→B Repeat Play depending on the DVD.
Select "A-B REPEAT" after pressing DISPLAY. During A←→B Repeat Play, the indicator of the "A-B REPEAT" lights in green.



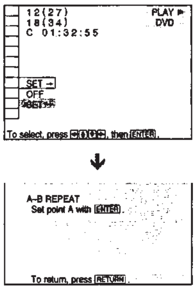
■A-B REPEAT

- SET→: sets the A and B points.
- OFF: does not play a specific portion of a title/chapter/track repeatedly.

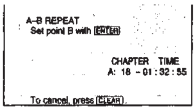
You can display the "A-B REPEAT" display using the remote
Press A←→B on the remote.

Setting a portion for A←→B repeat

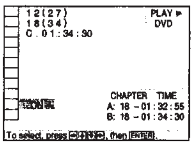
1 Select "SET→" in "A-B REPEAT."
The A←→B REPEAT setting display appears.



2 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press ENTER.
The starting point (point A) is set.



3 When you reach the ending point (point B), press ENTER again.
The setting points are displayed and the player starts repeating this specific portion.
"A-B REPEAT" appears on the front panel display during A←→B repeat play.



To cancel A←→B Repeat Play
Press CLEAR on the remote.

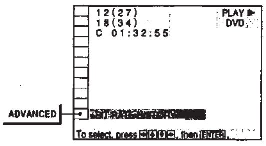
Notes

- You can set A←→B Repeat on only one specific portion.
- A←→B Repeat is canceled when:
  - you open or close the disc tray
  - you turn the power off
- When you set A←→B Repeat, the settings for Shuffle Play and Program Play are canceled.
- You may not be able to set A←→B Repeat, depending on the scene of the DVD or the VIDEO CD.

Checking the Play Information

DVD

You can check the play information on the bit rate, bit rate history or the position where the disc is played (layer).
While playing a disc, the approximate bit rate of the playback picture is always displayed by Mbps (Mega bit per second) and the audio by Kbps (Kilo bit per second).
Select "ADVANCED" after pressing DISPLAY.



■ADVANCED

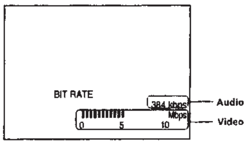
When playing a DVD

- BIT RATE: displays bit rate.
- BIT RATE HISTORY: displays bit rate and bit rate history.
- LAYER: displays layer and the point picked up.
- OFF: turns off ADVANCED display.

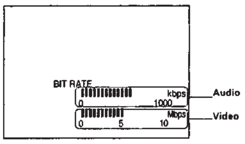
You can display the ADVANCED display directly
Press DISPLAY until the the ADVANCED display appears.

Displays of each item

BIT RATE

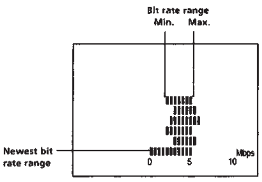


When you play MPEG AUDIO sound tracks



Bit rate refers to the amount of video/audio data per second in a disc. The higher the bit rate is, the larger the amount of data. When the bit rate level is high, there is a large amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

BIT RATE HISTORY



Indicates the transition of bit rate of the playback picture for a period up to the present.

LAYER

Indicates where the disc is played. When the DVD has dual layer, the player indicates which layer is being read. For details on layer, see page 64.

Using the Karaoke Control Menu

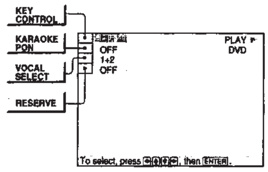
DVD VIDEO CD CD

You can use the Karaoke Control Menu when the player is in karaoke mode. Using the Karaoke Control Menu, you can enjoy karaoke by changing the key, switching the sound, reserving next titles and tracks, etc. You can also enjoy karaoke with any stereo disc.
For details about each Karaoke Control Menu item, see pages 40 to 45.

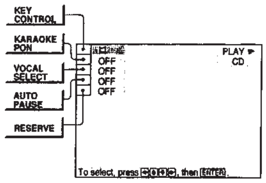
Displaying the Karaoke Control Menu

The player enters karaoke mode when a microphone is plugged into MIC 1 or 2 connector. You may also set the player to karaoke mode by pressing KARAOKE MODE on the remote.
Press DISPLAY until the Karaoke Control Menu is displayed.
The Karaoke Control Menu operations are same as that of the Control Menu. Use ↑/↓ to select item you want, then press ENTER. For details about the Control Menu operations, see "Using the Control Menu Display" on page 23.

When playing a DVD



When playing a VIDEO CD or CD



KEY CONTROL (page 42)
You can change the key to suit your vocal range.

KARAOKE PON (page 42)
You can enjoy karaoke with a stereo-recorded disc, even if it is a non-karaoke disc, by reducing the vocal.

VOCAL SELECT (page 43)
When playing a DVD with the Dolby Digital Karaoke format in karaoke mode, you can select the guide vocal and melody to be sung recorded in the karaoke track.
When playing a VIDEO CD/CD in karaoke mode, you can listen to the guide vocal.

AUTO PAUSE (VIDEO CD/CD only)(page 44)
You can set the player to pause every time a song is played.

RESERVE (page 44)
You can select and reserve up to 24 titles/tracks when the player is in karaoke mode. You can reserve additional titles/tracks even if somebody is performing karaoke.

Enjoying Karaoke

This chapter describes how to play discs in karaoke mode and how to use various features to enjoy karaoke.

Using Karaoke

DVD VIDEO CD CD

You can enjoy karaoke (singing along with a disc) by setting this player to karaoke mode. You can connect up to two microphones to the player.

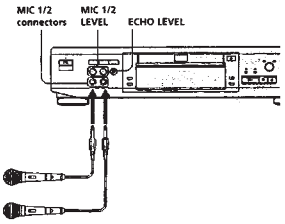
Setting the player to karaoke mode

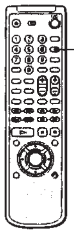
The player enters karaoke mode when a microphone is plugged into MIC 1 or 2 connector.

The player exits from karaoke mode when you disconnect the microphones from both of the MIC 1 and 2 connectors. You may also switch karaoke mode on or off by pressing KARAOKE MODE on the remote.

Notes on karaoke mode

- You cannot use the following function in karaoke mode
  - Program Play
- You cannot switch karaoke mode on or off while playing back in PCM96kHz. First stop playing back and then switch karaoke mode on or off.





Adjusting the microphone

1. **Set the MIC 1/2 LEVEL control of the MIC connector to MIN.**
2. **Plug a microphone (not supplied) into the MIC connector.**
   When a microphone is connected to the MIC 1 or 2 connector, the player enters karaoke mode.
3. **Set the ON/OFF switch on the microphone to ON and turn the MIC 1/2 LEVEL control to adjust the microphone volume.**
4. **Turn the ECHO LEVEL control to adjust the echo.**
   The same echo level is applied to all microphones connected.

If howling occurs

- Move the microphone away from the speakers.
- Lower the microphone volume or echo level.
- Lower the overall volume.

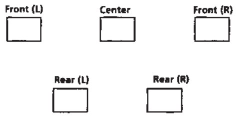
Notes

- The sound input from the microphone is not output from the DIGITAL OUT (OPTICAL, COAXIAL) connectors.
- You can turn karaoke mode off even when a microphone is connected to the MIC 1 or 2 connector by pressing KARAOKE MODE on the remote. You can continue using the microphone, however, the echo function and the ECHO LEVEL control do not work.

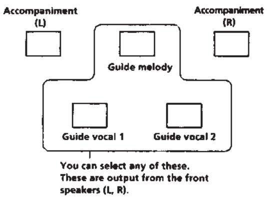
Dolby Digital Karaoke format DVD

Dolby Digital format, which reproduces surround sound using 5 channels, contains the "Dolby Digital Karaoke" format specialized for karaoke. In the Dolby Digital Karaoke format discs, guide melody and guide vocal are recorded besides the accompaniment so that you can select them when the player is in karaoke mode.

Speaker output in normal Dolby Digital format (5 channel surround)



Speaker output in Dolby Digital Karaoke format



You can check the audio information using "AUDIO" in the Control Menu display. When playing a Dolby Digital Karaoke disc, "♪KARAOKE" appears at the current audio format. (page 29)

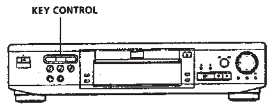
Example:

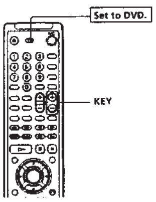
DOLBY DIGITAL 3 / 2
♪KARAOKE

2/0 : Accompaniment only is recorded.
3/0 : Recorded with guide melody.
3/1 : Recorded with guide melody and guide vocal.
3/2 : Recorded with guide melody and two kinds of guide vocals.

Changing the Key (Key Control) DVD VIDEO CD CD

You can change the key to suit your vocal range.
While playing karaoke, press one of the KEY CONTROL buttons repeatedly to find the key that suits your vocal range.





Press KEY CONTROL or KEY in karaoke mode.

To	Press
raise the key	♯ (or + on the remote)
lower the key	♭ (or – on the remote)
return to the original key	♮

You can adjust the key in 17 steps (8 steps higher, 8 steps lower and the original key).

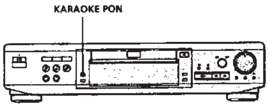
You can change the key using "KEY CONTROL" in the Karaoke Control Menu display
Select "KEY CONTROL" in the Karaoke Control Menu, change the key using ←/→, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 39.

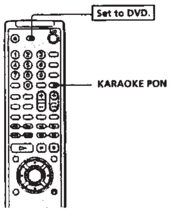
Note
The key automatically returns to the original key when the title or track changes.

Playing Karaoke with Any Stereo Disc (Karaoke Pon)

DVD VIDEO CD CD

You can enjoy karaoke with a stereo-recorded disc, even if it is a non-karaoke disc, by reducing the vocal.





Press KARAOKE PON in karaoke mode.

To cancel the Karaoke Pon function
Press KARAOKE PON again.

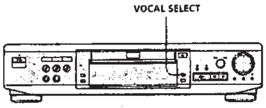
You can turn on and off the Karaoke Pon function using "KARAOKE PON" in the Karaoke Control Menu display
Select "KARAOKE PON" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 39.

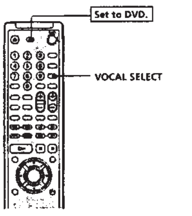
Notes

- The stereo effect will be reduced.
- This function may not work well in the following cases:
  - only a few instruments are playing
  - a duet is playing
  - the vocal on the disc deviates from the center
  - monaural-recorded discs (the accompaniment is also reduced)
  - multiplex discs

Selecting the Vocal (Vocal Select) DVD VIDEO CD CD

When playing a DVD with the Dolby Digital Karaoke format in karaoke mode, you can select the guide vocal and melody to be sung recorded in the karaoke track.
When playing a VIDEO CD/CD in karaoke mode, you can listen to the guide vocal.





When playing a DVD
You can turn the guide vocal on and off and select the guide vocal or melody to be sung recorded in the karaoke track of Dolby Digital format in karaoke mode.
Turn on the guide vocal by pressing VOCAL SELECT while playing a disc.
Each time you press VOCAL SELECT, the guide vocal channel changes as follows:

→ 1+2 (Guide vocal 1+2)
↓
1 (Guide vocal 1)
↓
2 (Guide vocal 2)
↓
GM (Guide melody)
↓
OFF

Notes

- This function works only with the Dolby Digital Karaoke format.
- Depending on the DVD, you may not be able to do the above operations.
- If only one guide vocal is recorded in the disc, you can select only "1."

When playing a VIDEO CD or CD
When VIDEO CDs and CDs are played in karaoke mode, the audio output automatically switches so that only the left channel (accompaniment track) is played and output from both front speakers (L, R).
By pressing VOCAL SELECT while the accompaniment is played, you can listen to the vocal.
To select the vocal track, press VOCAL SELECT. Each time you press VOCAL SELECT, the output channel changes as follows:

→ OFF (L (accompaniment) only)
↓
L+R
↓
STEREO

You can turn the guide vocal on and off and select the guide vocal using "VOCAL SELECT" in the Karaoke Control Menu display
Select "VOCAL SELECT" in the Karaoke Control Menu, select the guide vocal using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 39.

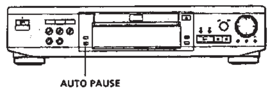
Note
If the disc is recorded with accompaniment on the right channel, you cannot hear accompaniment in karaoke mode. In this case, select "OFF" in "VOCAL SELECT" and select accompaniment channel using AUDIO on the remote. Each time you press AUDIO, the sound changes as follows:

→ L channel
↓
R channel
↓
Stereo

Pausing at the End of Each Track (AUTO PAUSE)

VIDEO CD CD

You can set the player to pause every time a track is played.



Press AUTO PAUSE in karaoke mode.

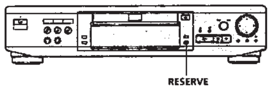
To cancel auto pause
Press AUTO PAUSE again.

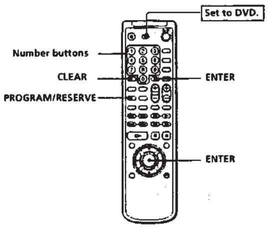
You can turn on and off auto pause using "AUTO PAUSE" in the Karaoke Control Menu display
Select "AUTO PAUSE" in the Karaoke Control Menu, select "ON" or "OFF" using ↑/↓, and then press ENTER.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 39.

Note
The AUTO PAUSE function does not work during PBC playback of a VIDEO CD.

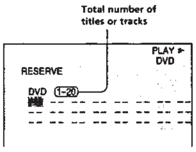
Reserving Karaoke (RESERVE) DVD VIDEO CD CD

You can select and reserve up to 24 tracks/titles when the player is in karaoke mode. You can reserve additional tracks/titles even if somebody is performing karaoke. The performed track or title disappears from the display.

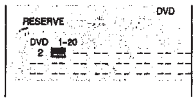




1 Press RESERVE in karaoke mode.
The RESERVE display appears.

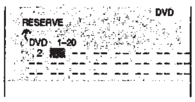


2 Input the title or track number using the number buttons, then press ENTER.

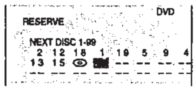


To cancel this title or track, press CLEAR.

3 To reserve other titles or tracks, repeat Step 2.



To reserve titles or tracks from another disc:
1 Press 0.
" ⊙ (next disc)" appears.
2 Press ENTER.
3 Input the title or track number of the another disc.



To cancel the number, press CLEAR.

4 Press ▷ to start playing the reserved title or track.
You can reserve other titles or tracks during playing by repeating from Step 2.

To exit the RESERVE display
Press RESERVE.

To cancel reserve play
Select "OFF" in "RESERVE" in Karaoke Control Menu or press CLEAR.

You can display "RESERVE" display using the Karaoke Control Menu
Select "SET→" in "RESERVE" in the Karaoke Control Menu display.
To use the Karaoke Control Menu, see "Displaying the Karaoke Control Menu" on page 39.

Notes
- You cannot do Shuffle Play and Repeat Play during reserving. Shuffle Play or Repeat Play setting is canceled when you start reserving.
- If the reserved title or track does not exist, "Reserve play of title ** is prohibited now." or "Reserve play of track ** is prohibited now." appears and next title or track is played.
- Reserve function does not work during PBC playback of a VIDEO CD.

Settings and Adjustments

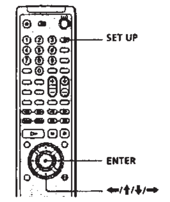
This chapter describes how to set and how to adjust using the on-screen SET UP menu. Most settings and adjustments are required to be set when you first use the player.
This chapter also describes how to set the remote for controlling the TV or the AV receiver (amplifier).

Using the Setup Display

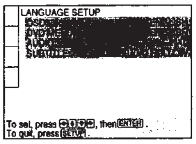
DVD VIDEO CD CD

Using the setup display, you can do the initial setup, adjusting the picture and sound quality, setting the various outputs, etc. You can also set a language for the subtitles and the setup display, limit playback by children, etc.
For details on each setup display item, see pages 49 to 56.

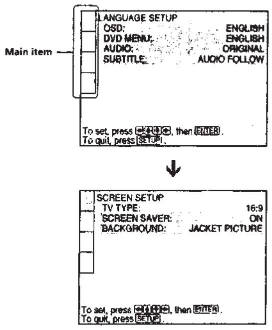
Note
You can display the setup display only when the player is in stop mode.



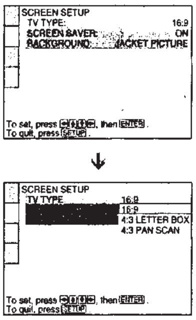
1 Press SET UP to display the setup display on the TV screen.



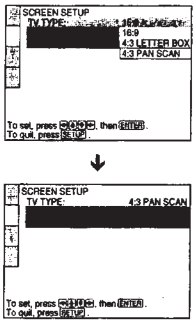
2 Select the main item you want using ↑/↓, and then press ENTER.
The selected main item is highlighted.



3 Select the item you want using ↑/↓, then press → or ENTER.



4 Select the setting you want using ←/↑/↓/→, then press ENTER.



To cancel using the setup display on the way
Press SET UP on the remote.

Note
Some setup display items require operations other than selecting the setting. For details on these items, see the relevant pages.

Setup Display Item List

Default settings are underlined.

LANGUAGE SETUP (page 49)

- OSD
  - <u>ENGLISH</u>
  - CHINESE 1
  - CHINESE 2
- DVD MENU
  - <u>ENGLISH</u>
  - CHINESE
  - JAPANESE
  - FRENCH
  - GERMAN
  - ITALIAN
  - SPANISH
  - DUTCH
  - DANISH
  - SWEDISH
  - FINNISH
  - NORWEGIAN
  - PORTUGUESE
  - RUSSIAN
  - OTHERS ➡
- AUDIO
  - <u>ORIGINAL</u>
  - (same as DVD MENU)
- SUBTITLE
  - <u>AUDIO FOLLOW</u>
  - (same as DVD MENU)

SCREEN SETUP (page 50)

- TV TYPE
  - <u>16:9</u>
  - 4:3 LETTER BOX
  - 4:3 PAN SCAN
- SCREEN SAVER
  - <u>ON</u>
  - OFF
- BACKGROUND
  - <u>JACKET PICTURE</u>
  - GRAPHICS
  - BLUE
  - BLACK

CUSTOM SETUP (page 51)

- COLOR SYSTEM
  - <u>AUTO</u>
  - PAL
  - NTSC
- AUTO PLAY
  - <u>OFF</u>
  - TIMER
  - DEMO1
  - DEMO2
- DIMMER
  - <u>BRIGHT</u>
  - DARK
  - OFF
- PAUSE MODE
  - <u>AUTO</u>
  - FRAME
- PARENTAL CONTROL ➡

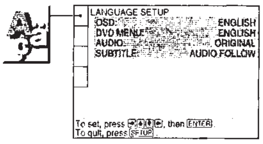
AUDIO SETUP (page 54)

- AUDIO ATT
  - <u>OFF</u>
  - ON
- AUDIO DRC
  - <u>STANDARD</u>
  - TV MODE
  - WIDE RANGE
- TRACK SELECTION
  - <u>OFF</u>
  - AUTO
- DOWNMIX
  - <u>DOLBY SURROUND</u>
  - NORMAL
- DIGITAL OUT
  - <u>ON</u>
    - DOLBY DIGITAL
    - MPEG
    - DTS
  - OFF

Setting the Language for Display and Sound (LANGUAGE SETUP) DVD CD

Select "LANGUAGE SETUP" after pressing SET UP.
"LANGUAGE SETUP" allows you to set various languages for on-screen display or sound.
Default settings are underlined.

Note
When you select a language that is not recorded on the DVD, one of the recorded languages is automatically selected except for the "OSD".



■OSD (On-Screen Display)
Switches the language for the on-screen display.
- <u>ENGLISH</u>
- CHINESE 1
- CHINESE 2

■DVD MENU
Switches the language for the DVD menu.
- <u>ENGLISH</u>
- CHINESE
- JAPANESE
- FRENCH
- GERMAN
- ITALIAN
- SPANISH
- DUTCH
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- PORTUGUESE
- RUSSIAN
- OTHERS➡
  When you select "OTHERS➡," select and enter the language code from the list using the number buttons (page 66).
  After you have once selected, the language code (4 digits) is displayed.

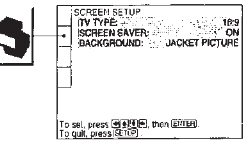
■AUDIO
Switches the language for the sounds.
- <u>ORIGINAL</u>: the language given priority in the disc
- ENGLISH
- CHINESE
- JAPANESE
- FRENCH
- GERMAN
- ITALIAN
- SPANISH
- DUTCH
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- PORTUGUESE
- RUSSIAN
- OTHERS➡
  When you select "OTHERS➡," select and enter the language code from the list using the number buttons (page 66).
  After you have once selected, the language code (4 digits) is displayed.

■SUBTITLE
Switches the language for the subtitles.
- <u>AUDIO FOLLOW</u>*
- ENGLISH
- CHINESE
- JAPANESE
- FRENCH
- GERMAN
- ITALIAN
- SPANISH
- DUTCH
- DANISH
- SWEDISH
- FINNISH
- NORWEGIAN
- PORTUGUESE
- RUSSIAN
- OTHERS➡
  When you select "OTHERS➡," select and enter the language code from the list using the number buttons (page 66).
  After you have once selected, the language code (4 digits) is displayed.

* When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language for the setting you selected in "AUDIO."

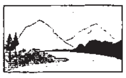
Settings for Display (SCREEN SETUP) DVD CD

Select "SCREEN SETUP" after pressing SET UP.
"SCREEN SETUP" allows you to set the display according to the playback conditions.
Default settings are underlined.



■TV TYPE
Selects the aspect ratio of the TV to be connected.
- <u>16:9</u>: when you connect a wide-screen TV to the player.
- 4:3 LETTER BOX: when you connect a normal TV to the player. Displays a wide picture with bands displayed on the upper and lower portions of the screen.
- 4:3 PAN SCAN: when you connect a normal TV to the player. Displays the wide picture on the whole screen with a portion automatically cut off.

16:9



4:3 LETTER BOX

4:3 PAN SCAN

Note
Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" and vice versa.

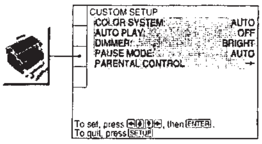
■SCREEN SAVER
Turns on and off the screen saver. If you turn on the screen saver, the screen saver image appears when you leave the player or the remote in pause or stop mode for 15 minutes or when you play back a CD for more than 15 minutes. The screen saver is useful to prevent your display from becoming damaged.
- <u>ON</u>: turns on the screen saver.
- OFF: turns off the screen saver.

■BACKGROUND
Selects the background color or picture of the TV screen in stop mode or while playing a CD.
- <u>JACKET PICTURE</u>: The jacket picture appears in the background, but only when the jacket picture is already recorded on the disc.
- GRAPHICS: The graphic picture stored in memory in the player beforehand appears in the background.
- BLUE: The background color is blue. When the player is in karaoke mode, the background color changes to magenta.
- BLACK: The background color is black.

Note
If a disc which does not contain the jacket picture is played while "BACKGROUND" is set to "JACKET PICTURE," the graphic picture stored in the player will automatically appear in the background.

Custom Settings (CUSTOM SETUP) DVD CD

Select "CUSTOM SETUP" after pressing SET UP.
"CUSTOM SETUP" allows you to set the playback conditions.
Default settings are underlined.



■COLOR SYSTEM
Selects the color system when you play a VIDEO CD.
- <u>AUTO</u>: outputs the video signal in the system of the VIDEO CD, either PAL or NTSC. If your TV is the DUAL system, select AUTO.
- PAL: changes the video signal of an NTSC VIDEO CD and outputs it in PAL system.
- NTSC: changes the video signal of a PAL VIDEO CD and outputs it in NTSC system.

Notes
- You cannot change the color system of the DVD itself.
- You can change the color system of this unit according to the connected TV. See page 9.

■AUTO PLAY
Selects the setting of Auto Play when you connect the AC power cord to the AC outlet.
- <u>OFF</u>: does not use "TIMER," "DEMO1" or "DEMO2" to start playing.
- TIMER: starts playing a disc automatically when you connect the AC power cord to the AC outlet. By connecting a timer (not supplied), you can start playing at any time you want.
- DEMO1: starts playing the demonstration 1 automatically.
- DEMO2: starts playing the demonstration 2 automatically.

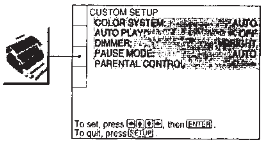
■DIMMER
Adjusts the lighting of the front panel display.
- <u>BRIGHT</u>: makes the front panel display bright.
- DARK: makes the front panel display dark.
- OFF: turns off the lighting of the front panel display.

■PAUSE MODE
Selects the picture in pause mode.
- <u>AUTO</u>: A picture including subjects that move dynamically is output with no jitter. Normally select this position.
- FRAME: A picture including subjects that do not move dynamically is output with high resolution.

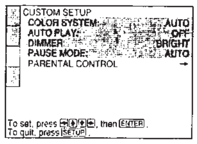
■PARENTAL CONTROL
Sets a password and playback limitation level when you play DVDs with playback limitation for children.
For details, see "Limiting Playback by Children (Parental Control) ."

Limiting Playback by Children (Parental Control) DVD

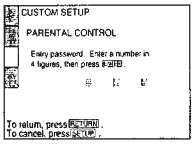
Select "CUSTOM SETUP" after pressing SET UP.
Playing some DVDs can be limited depending on the age of users. The "Parental Control" function allows you to set a playback limitation level.



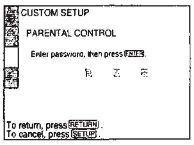
1 Select "PARENTAL CONTROL" using ↑/↓, then press ENTER.



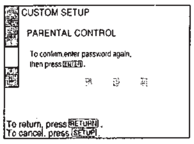
■When you have not entered a password yet
The display for entering a password appears.



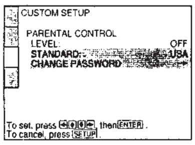
■When you have already entered a password
The display for confirming the password appears. Skip Step 2.



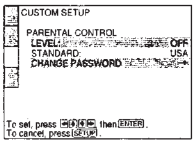
2 Enter a password in 4 digits using the number buttons, then press ENTER.
The digits change to asterisks (✱), and the display for confirming the password appears.



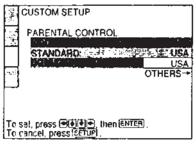
3 To confirm your password, enter it using the number buttons, then press ENTER.
The display for setting the playback limitation level and changing the password appears.



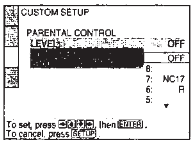
4 Select "STANDARD" using ↑/↓, then press →.



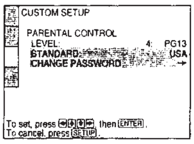
5 Select an area as the standard for playback limitation level using ↑/↓, then press →.
When you select "OTHERS→," select and enter the standard code in the table on the next page using number buttons.



6 Select "LEVEL" using ↑/↓, then press →.



7 Select the level you want using ↑/↓, then press ENTER.



The lower the value is, the more strict the limitation.

To return to the normal screen
Press SET UP.

To turn off the Parental Control function and play the DVD after entering your password
Set "LEVEL" to "OFF" in Step 7, then press ▷.

To change the password
1 After Step 3, select "CHANGE PASSWORD" using ↑/↓, then press → or ENTER.
The display for changing the password appears.
2 Follow Steps 2 and 3 to enter a new password.

You can turn off the Parental Control function just after inserting the DVD (Parental Control Temporarily Canceled)
When you set a playback limitation level and insert the DVD, the PARENTAL CONTROL display appears. Enter the password to turn off the Parental Control function.
When you stop playing the DVD, the level returns to the original level.

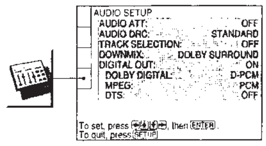
If you have forgot your password
Enter the 6 digits number "199703" in Step 2 to clear the current password. To enter a new password, follow the procedure from Step 2 again.

Notes
- When you play DVDs which do not have the Parental Control function, playback cannot be limited on this player.
- When you do not set a password, you cannot change the settings for playback limitation.
- Depending on the DVD, you may be asked to change the parental control level while playing the disc. In this case, enter the password, then change the level.
When you stop playing the DVD, the level returns to the original level.

Standard	Code number
Austria	2046
Belgium	2057
Canada	2079
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
Hong Kong	2219
Indonesia	2238
Italy	2254
Japan	2276
Malaysia	2363
Netherlands	2376
Norway	2379
Philippines	2424
Russian	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Taiwan	2543
Thailand	2528
United Kingdom	2184

Settings for Sound (AUDIO SETUP)

Select "AUDIO SETUP" after pressing SET UP.
"AUDIO SETUP" allows you to set the sound according to the playback conditions.
Default settings are underlined.



■AUDIO ATT (attenuation)
Selects the setting of the output from the LINE OUT (AUDIO 1, 2) connectors according to the audio equipment to be connected.
- OFF: turns off the audio attenuation.
- ON: reduces the audio output level so that no sound distortion occurs.

Note
The setting does not affect the output from the DIGITAL OUT OPTICAL and COAXIAL connectors.

■AUDIO DRC (Dynamic Range Control)
Makes the sound clear with the volume turned down at night, etc., when you play a DVD. This affects the output from the DIGITAL OUT connectors only when "PCM" in "DIGITAL OUT" is set to "ON," and it affects the output from the LINE OUT (AUDIO 1,2) connectors.
- STANDARD: Normally select this position.
- TV MODE: makes the low sound clear even if you turned the volume down, so it is good for playing at night. It is especially recommended when you listen to the sound using the speakers of the TV.
- WIDE RANGE: It gives you the feeling of being at a live performance. When you use high quality speakers, it is more effective.

Note
When you play DVDs without the AUDIO DRC function, there may be no effect on the sound.

■TRACK SELECTION
Gives the sound track which contains the highest number of the channels priority when you play a DVD on which multiple audio formats are recorded. If multiple audio channels are recorded in PCM, DTS, MPEG AUDIO or Dolby Digital format, the higher-numbered channel audio recorded in PCM, DTS, MPEG AUDIO or Dolby Digital format is played.
- OFF : No priority given.
- AUTO : Priority given.

Notes
- When you set this item to "AUTO", the language may change depending on the "AUDIO" settings in "LANGUAGE SETUP." The "TRACK SELECTION" setting has higher priority than that of "AUDIO" settings in "LANGUAGE SETUP" (page 50).
- If you set "DTS" in "AUDIO SETUP" to "OFF", the DTS sound track is not played even if you set this item to "AUTO" and the highest-numbered channel audio is recorded in DTS format.
- If PCM, DTS, MPEG AUDIO and Dolby Digital sound tracks have the same number of the highest channels, the player selects PCM, DTS, Dolby Digital and MPEG AUDIO sound tracks, in this order.
- Depending on the DVD, the audio with priority may be predetermined. In this case, you cannot give priority to the DTS, MPEG AUDIO or Dolby Digital format by selecting "AUTO."

■DOWNMIX*
Switches the mixing down methods when you play a DVD on which 3 or more channels in Dolby Digital format is recorded.
- DOLBY SURROUND: when the player is connected to an audio component that conforms to Dolby Surround (Pro Logic).
- NORMAL: when the player is connected to a normal audio component.

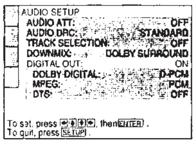
* The setting affects the following connectors:
–LINE OUT (AUDIO 1, 2) connectors
–DIGITAL OUT (OPTICAL, COAXIAL) connectors.

■DIGITAL OUT
Selects output signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- ON: Normally select this position. When you select "ON," set "DOLBY DIGITAL," "MPEG" and "DTS." For details on setting them, see "Setting for the Signal to the Digital Output."
- OFF: when the player does not output the sound signals via DIGITAL OUT OPTICAL and COAXIAL connectors, if you select this position, the influence of the digital circuit upon the analog one is minimum.

Notes
- When you play the sound tracks with 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL, COAXIAL) are converted to 48 kHz (sampling frequency). When the signals are output from LINE OUT (AUDIO 1, 2) connectors, sampling frequency stays at 96kHz and the output signals are converted to analog signals.
- When you select "OFF," You cannot set "DOLBY DIGITAL," "MPEG" and "DTS."

Setting for the Signal to the Digital Output

When you select "ON," set "DOLBY DIGITAL," "MPEG" and "DTS."
Switches the methods of outputting audio signals when you connect a digital component such as a receiver (amplifier) having a digital connector, an audio component having a built-in decoder (Dolby Digital, MPEG or DTS), a DAT or MD via the DIGITAL OUT OPTICAL or COAXIAL connector using an optical or coaxial digital connecting cord. For details on the connection, see pages 11 and 12.



■DOLBY DIGITAL
Selects output Dolby Digital signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."
- D-PCM (Downmix PCM): when you play the Dolby Digital sound tracks, the output audio signals are mixed down to 2 channels. With the settings of the item "DOWNMIX" in "AUDIO SETUP," you can select whether the signals conform to Dolby Surround (Pro Logic) or not.
- DOLBY DIGITAL: when the player is connected to an audio component with a built-in Dolby Digital decoder.

Note
If the player is connected to an audio component lacking a built-in Dolby Digital decoder, do not set "DOLBY DIGITAL" in "AUDIO SETUP" to "DOLBY DIGITAL." Otherwise, when you play the Dolby Digital sound track, a loud noise or no sound will come out from the speakers, affecting your ears or causing the speakers to be damaged.

■MPEG

Selects output MPEG AUDIO signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."

- PCM: when the player is connected to an audio component lacking a built-in MPEG decoder. If you play MPEG AUDIO sound tracks, the player outputs stereo signals taken from MPEG AUDIO signals via the DIGITAL OUT OPTICAL and COAXIAL connectors.
- MPEG: when the player is connected to an audio component having a built-in MPEG decoder.

Note
If the player is connected to an audio component lacking a built-in MPEG decoder, do not set "MPEG" in "AUDIO SETUP" to "MPEG." Otherwise, when you play the MPEG AUDIO sound track, a loud noise will come out from the speakers, affecting your ears or causing the speakers to be damaged.

Note
The player outputs the MPEG analog audio sound only from the front speakers when you set "DIGITAL OUT" in "AUDIO SETUP" to "ON" and then set "MPEG" to "MPEG."

■DTS

Selects output DTS signals via the DIGITAL OUT OPTICAL and COAXIAL connectors. You cannot select this item when you set "DIGITAL OUT" to "OFF."

- OFF: when the player is connected to an audio component lacking a built-in DTS decoder.
- ON: when the player is connected to an audio component having a built-in DTS decoder.

Note
Select the setting correctly. Otherwise, no sound or strange sound will come out from the speakers, affecting your ears or causing the speakers to be damaged.

- **Do not play the DTS sound tracks without connecting the player to an audio component having a built-in DTS decoder. You cannot hear the DTS sound unless you connect the player to an audio component having a built-in DTS decoder.**
- **When you play the DTS sound track on a CD, a loud noise will come out from the LINE OUT (AUDIO 1, 2) connectors, affecting your ears or causing the speakers to be damaged.**
- **When you play the DTS sound track on a DVD, no sounds will come out from the LINE OUT (AUDIO 1, 2) connectors.**

Notes on playing the DTS sound tracks on a CD

- Do not play the DTS sound tracks without connecting the player to an audio component having a built-in DTS decoder. The player output the DTS signal via the DIGITAL OUT OPTICAL and COAXIAL connectors even if "DTS" in "AUDIO SETUP" is set to "OFF" in the setup display, affecting your ears or causing the speakers to be damaged.
- Set the sounds to "STEREO" when you play the DTS sound tracks on a CD. (See "Changing the Sounds" on page 29.) If you set the sounds to "1/L" or "2/R", no sounds will come out from the DIGITAL OUT OPTICAL and COAXIAL connectors.

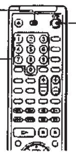
Notes on playing the DTS sound tracks on a DVD

- No sounds will come out from the LINE OUT (AUDIO 1, 2) connectors.
- If the player is connected to an audio component lacking a built-in DTS decoder, do not set "DTS" in "DIGITAL OUT" to "ON" in the setup display. Otherwise, when you play the DTS sound track, a loud noise will come out from the speakers, affecting your ears or causing the speakers to be damaged.
- When you set "DTS" in "AUDIO SETUP" to "OFF", no sound will come out from the DIGITAL OUT OPTICAL and COAXIAL connectors even if you play DTS sound tracks on DVDs.

Settings and Adjustments

Controlling the TV or the AV Receiver (Amplifier) with the Supplied Remote

If you adjust the remote signal, you can control your TV with the supplied remote. Default setting is to control Sony TVs with the ■ mark.
When you connect the player to a Sony AV receiver (amplifier), you can also set the input of the receiver (amplifier) to this player with the supplied remote.



Controlling TVs with the remote

1 **Slide TV/DVD switch to TV.**

2 **Hold down I/⏻ (POWER), and enter your TV's manufacturer's code (see the table) using the number buttons. Then release I/⏻ (POWER).**

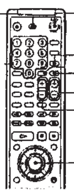
Code numbers of controllable TVs
If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Notes
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote commander, the code number may reset to 01 (Sony). Reset the appropriate code number.

Manufacturer	Code number	Manufacturer	Code number
Sony (default)	01	Sharp	29
Gold Star	03, 04	Aiwa	32
Philips	06, 08	JVC	33
Miver	09	Toshiba	38
Blaupunkt	10, 21	Siemens	39
Grundig	11	Thomson	43
Saba	12, 13	Loewe	45
Panasonic	17, 49	Orion	47, 48
Samsung	23	Ferguson	52
Hitachi	24	NEC	66
Sanyo	25	TEAC	67
Pioneer	26	Akai	68
Mitsubishi	27, 28, 50	Nokia	69

Settings and Adjustments

When you set the TV/DVD switch to TV, you can control your TV using the keys below.



By pressing	You can
I/⏻ (POWER)	Turn the TV on or off
TV/VIDEO	Select the input source for the TV
VOL	Adjust the volume of the TV
TV CH	Change the channel of the TV
WIDE MODE	Switch the wide picture on or off

Note
Depending on the TV, you may not be able to control your TV or to use some of the buttons above.

Controlling an AV receiver (amplifier) with the remote

1 **Slide TV/DVD switch to DVD.**

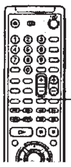
2 **Hold down I/⏻ (POWER), and enter your AV receiver's manufacturer's code (see the table below) using the number buttons. Then release I/⏻ (POWER).**

Manufacturer	Code number
Sony	91, 88, 89
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sunsui	87
Technics	97, 98
Yamaha	94, 95, 96
Sony's TV	90* (default)

* By setting the code number 90, you can adjust the volume of the TV even if the TV/DVD switch is on the DVD side, if you do not control an AV receiver (amplifier) with the remote.

Code numbers of controllable receivers (amplifiers)
If more than one code number is listed, try entering them one at a time until you find the one that works with your receiver (amplifier).

You can also change the sound volume of the AV receiver (amplifier) using VOL.



Note
Depending on the AV receiver (amplifier), you may not be able to control your AV receiver (amplifier).

Settings and Adjustments

Self-diagnosis function

When the self-diagnosis function works to prevent the player from malfunctioning, a five-character service number (combination of a letter and digits) flashes on the front panel display. In this case, check the following table.

First three characters	Cause and/or Corrective Action
C13	• The disc is dirty. ➡Clean the disc with a cleaning cloth. (page 6)
C31	• The disc is not inserted correctly. ➡Open the disc tray and insert the disc correctly.
Exx (xx is any number)	• To prevent the player from malfunctioning, the self-diagnosis function has worked. ➡When you contact your Sony dealer or local authorized Sony service facility, give the 5-character service number. (example: E:61:10)

Additional Information

Language Code List

For details, see page 31, 49.

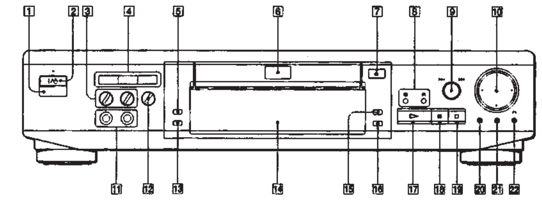
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1186	Scots Gaelic	1350	Malayalam	1513	Siswati
1028	Abkhazian	1194	Galician	1352	Mongolian	1514	Sesotho
1032	Afrikaans	1196	Guarani	1353	Moldavian	1515	Sundanese
1039	Amharic	1203	Gujarati	1356	Marathi	1516	Swedish
1044	Arabic	1209	Hausa	1357	Malay	1517	Swahili
1045	Assamese	1217	Hindi	1358	Maltese	1521	Tamil
1051	Aymara	1226	Croatian	1363	Burmese	1525	Telugu
1052	Azerbaijani	1229	Hungarian	1365	Nauru	1527	Tajik
1053	Bashkir	1233	Armenian	1369	Nepali	1528	Thai
1057	Byelorussian	1235	Interlingua	1376	Dutch	1529	Tigrinya
1059	Bulgarian	1239	Interlingue	1379	Norwegian	1531	Turkmen
1060	Bihari	1245	Inupiak	1393	Occitan	1532	Tagalog
1061	Bislama	1248	Indonesian	1403	(Afan) Oromo	1534	Setswana
1066	Bengali; Bangla	1253	Icelandic	1408	Oriya	1535	Tonga
1067	Tibetan	1254	Italian	1417	Punjabi	1538	Turkish
1070	Breton	1257	Hebrew	1428	Polish	1539	Tsonga
1079	Catalan	1261	Japanese	1435	Pashto; Pushto	1540	Tatar
1093	Corsican	1269	Yiddish	1436	Portuguese	1543	Twi
1097	Czech	1283	Javanese	1463	Quechua	1557	Ukrainian
1103	Welsh	1287	Georgian	1481	Rhaeto-Romance	1564	Urdu
1105	Danish	1297	Kazakh	1482	Kirundi	1572	Uzbek
1109	German	1298	Greenlandic	1483	Romanian	1581	Vietnamese
1130	Bhutani	1299	Cambodian	1489	Russian	1587	Volapük
1142	Greek	1300	Kannada	1491	Kinyarwanda	1613	Wolof
1144	English	1301	Korean	1495	Sanskrit	1632	Xhosa
1145	Esperanto	1305	Kashmiri	1498	Sindhi	1665	Yoruba
1149	Spanish	1307	Kurdish	1501	Sangho	1684	Chinese
1150	Estonian	1311	Kirghiz	1502	Serbo-Croatian	1697	Zulu
1151	Basque	1313	Latin	1503	Singhalese	1703	Not specified
1157	Persian	1326	Lingala	1505	Slovak		
1165	Finnish	1327	Laothian	1506	Slovenian		
1166	Fiji	1332	Lithuanian	1507	Samoan		
1171	Faroese	1334	Latvian; Lettish	1508	Shona		
1174	French	1345	Malagasy	1509	Somali		
1181	Frisian	1347	Maori	1511	Albanian		
1183	Irish	1349	Macedonian	1512	Serbian		

Index to Parts and Controls

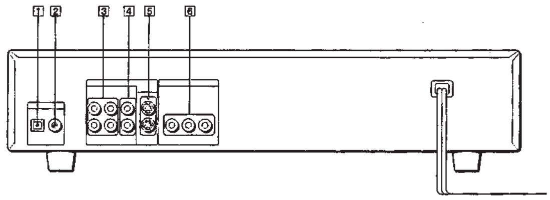
Refer to the pages indicated in parentheses for details.

Front Panel



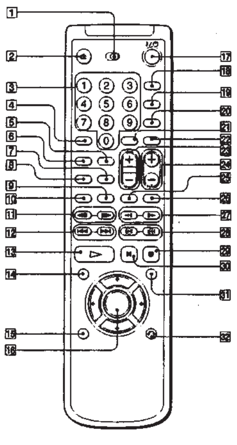
1 ◼ (remote sensor) (7)
Accepts the remote control signals.
2 I/⏻ (POWER) button and indicator (15)
Turns on and off the power of the player.
3 MIC 1/2 LEVEL controls (40)
Adjusts the volume of the microphone connected to the MIC 1 and 2 connectors.
4 KEY CONTROL buttons (42)
Press to adjust the key to suit the vocal.
5 KARAOKE PON button (42)
Reduces the singer's voice recorded in the disc.
6 Disc tray (15)
Place a disc on the tray.
7 ≜OPEN/CLOSE button (15)
Opens or closes the disc tray.
8 ⊖/⊕ (SCAN) buttons (17)
Locates a point while monitoring the picture.
9 ⏮/⏭ PREV/NEXT (DIRECT SEARCH dial) button (16)
Turn to select a chapter or track, and then press to go back to the selected chapter or track.
10 ←/↑/↓/→/ ENTER button
Selects and executes the items or settings.
11 MIC 1 and 2 connectors (40)
Connect the microphones to this connectors.
12 ECHO LEVEL control (41)
Adjusts the echo.
13 AUTO PAUSE button (44)
Pauses playing at the end of each track.
14 Front Panel Display (21)
Indicates the playing time, etc.
15 VOCAL SELECT (43)
Selects the guide vocal in karaoke mode.
16 RESERVE button (44)
Displays the "RESERVE" display.
17 ▷PLAY button (15)
Plays a disc.
18 ⏸PAUSE button (16)
Pauses playing a disc.
19 ■STOP button (16, 18)
Stops playing a disc.
20 TITLE button (19)
Displays the title menu on the TV screen.
21 DVD MENU button (19)
Displays the DVD menu on the TV screen.
22 ↶ RETURN button (20, 24)
Press to return to the previously selected screen, etc.

Rear Panel



1 DIGITAL OUT (OPTICAL) connector (11, 12)
Connects to an audio component using the optical digital connecting cord.
2 DIGITAL OUT (COAXIAL) connector (11, 12)
Connects to an audio component using the coaxial digital connecting cord.
3 LINE OUT (AUDIO 1, 2) connectors (8, 10)
Connects to the audio input connector on the TV or receiver (amplifier).
4 LINE OUT (VIDEO 1, 2) connectors (8)
Connects to the video input connector on the TV or monitor.
5 S VIDEO OUT (1, 2) connectors (8, 10)
Connects to the S video input connector on the TV or monitor.
6 COMPONENT VIDEO OUT connectors (9)
Connects to a monitor or projector having component video input connectors (Y, CB/B-Y, CR/R-Y) that conform to output signals from the player.

Remote

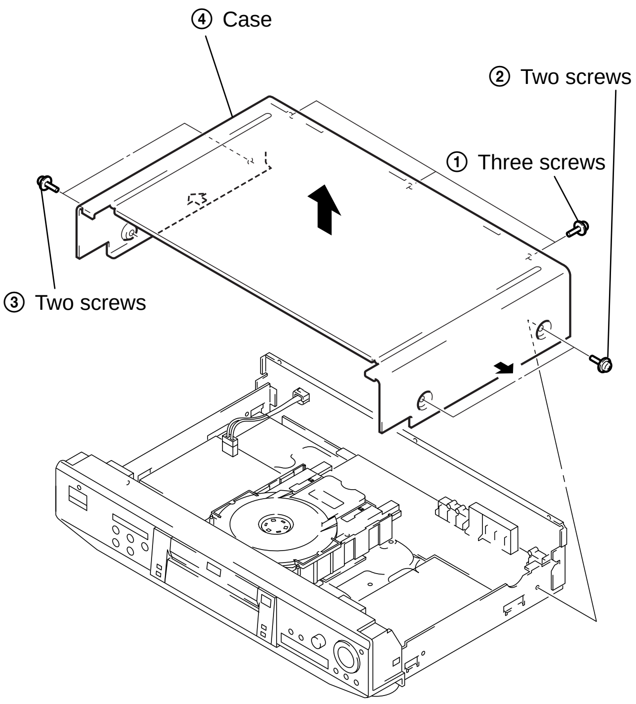


1 TV/DVD switch (57)
Selects to control the player or the TV with the remote.
2 ≜OPEN/CLOSE button (15)
Opens or closes the disc tray.
3 Number buttons
Selects the items or settings.
4 CLEAR button (33, 34, 35)
Press to return to the continuous play etc.
5 REPEAT button (35)
Displays the "REPEAT" display on the TV screen.
6 SHUFFLE button (34)
Displays the "SHUFFLE" display on the TV screen.
7 A↔B button (36)
Displays the "A-B" display on the TV screen.
8 PROGRAM/RESERVE button (32)
Displays the "PROGRAM" display. In karaoke mode, displays the "RESERVE" display.
9 ANGLE button (31)
Changes the angles when playing a DVD.
10 AUDIO button (29)
Changes the sound while playing a DVD or VIDEO CD.
11 ◀II/II▶STEP buttons (17)
Plays a disc frame by frame.
12 ⏮/⏭PREV/NEXT buttons (16)
Press to go to the next chapter or track, or to go back to the previous chapter or track.
13 ▷PLAY/SELECT button (15)
Plays a disc.
14 TITLE button (19)
Displays the title menu on the TV screen.
15 DISPLAY button (23)
Displays the Control Menu display on the TV screen to set or adjust the items.
16 ←/↑/↓/→/ ENTER buttons
Selects and executes the items or settings.
17 I/⏻ (POWER) button (15)
Turns on and off the power of the player and TV.
18 SET UP button (46)
Displays the setup display on the TV screen to set or adjust the items.
19 KARAOKE MODE button (40)
Press to set the player to karaoke mode.
20 WIDE MODE button (58)
VOCAL SELECT button (43)
When 1 is set to TV, switches the wide picture on or off.
When 1 is set to DVD, selects the guide vocal in karaoke mode.
21 ENTER button
Executes the items or settings.
22 TV/VIDEO button (57)
KARAOKE PON button (42)
When 1 is set to TV, controls TVs input source.
When 1 is set to DVD, use to reduce the singer's voice recorded on the disc in karaoke mode.
23 TV/Receiver operation buttons (57)
Controls TVs or AV receivers (amplifiers) volume.
24 TV CH buttons (57)
KEY buttons (42)
When 1 is set to TV, controls TVs channel.
When 1 is set to DVD, use to adjust the key in karaoke mode.
25 SUBTITLE button (31)
Displays the SUBTITLE menu in the Control Menu display.
26 TIME/TEXT button (21)
Displays the playing time of the disc, etc., on the front panel display.
27 ◀I/I▶ SLOW buttons (17)
Plays a disc in slow motion.
28 ⊖/⊕ SCAN buttons (17)
Locates a point while monitoring the picture.
29 ■STOP button (16, 18)
Stops playing a disc.
30 ⏸PAUSE button (16)
Pauses playing a disc.
31 DVD MENU button (19)
Displays the DVD menu on the TV screen.
32 ↶RETURN button (20, 24)
Press to return to the previously selected screen, etc.

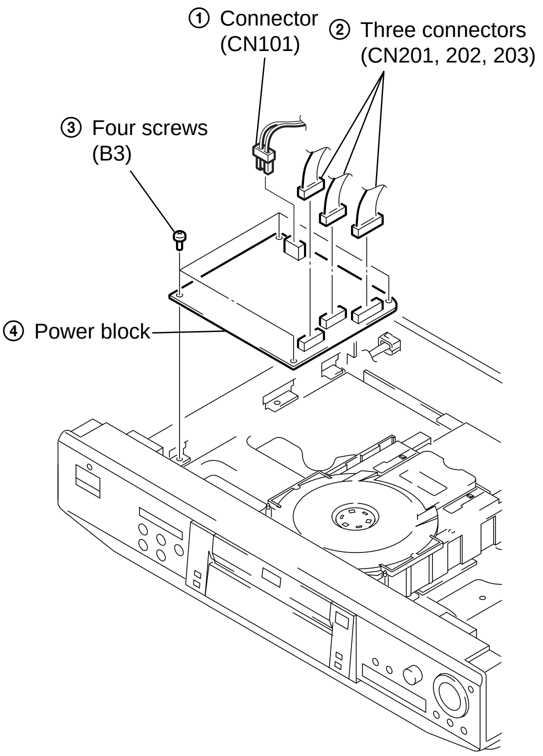
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

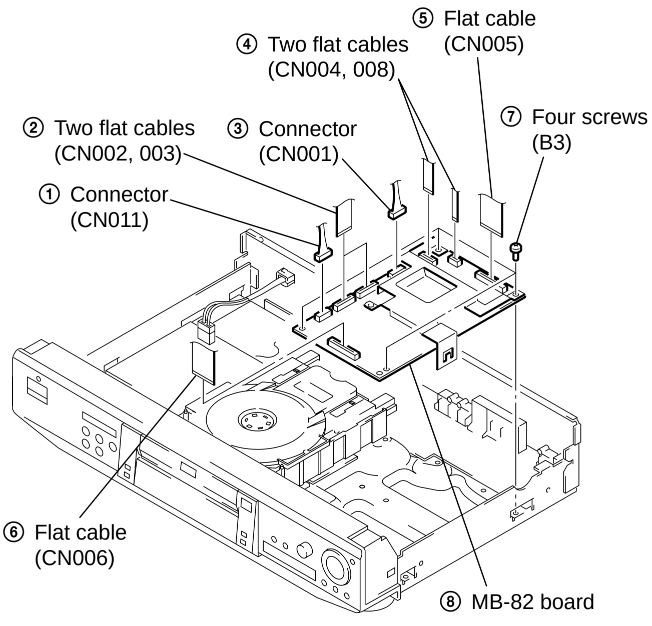
2-1. CASE REMOVAL



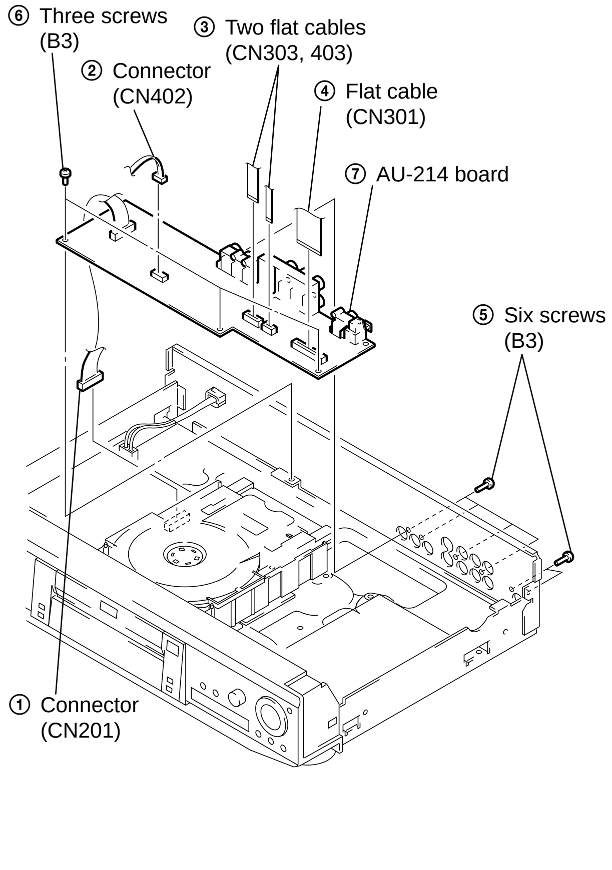
2-3. POWER BLOCK REMOVAL



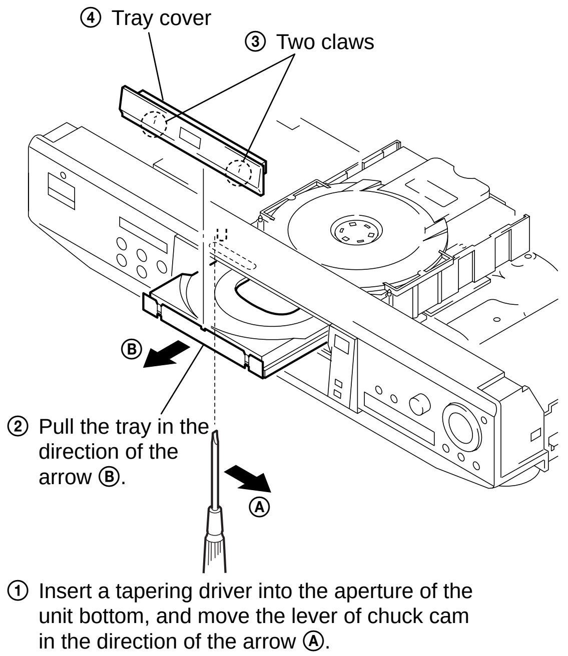
2-2. MB-82 BOARD REMOVAL



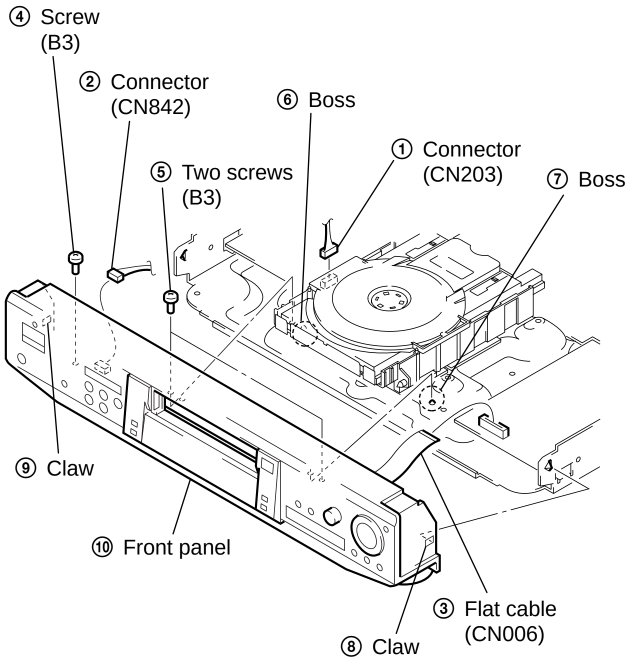
2-4. AU-214 BOARD REMOVAL



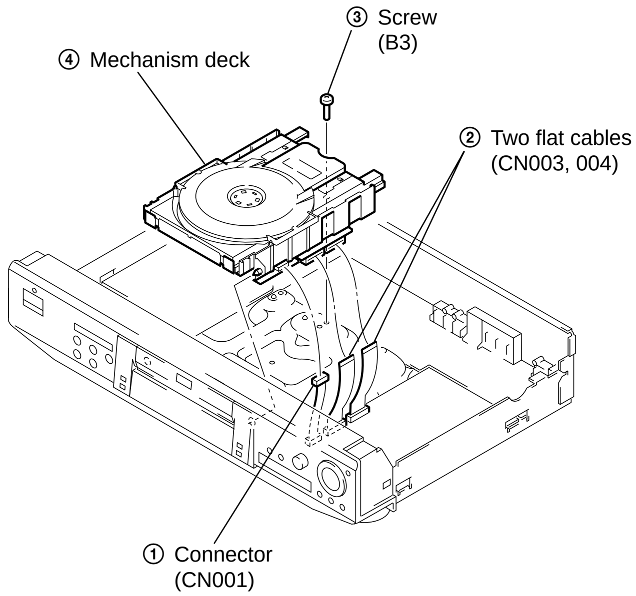
2-5. TRAY COVER REMOVAL



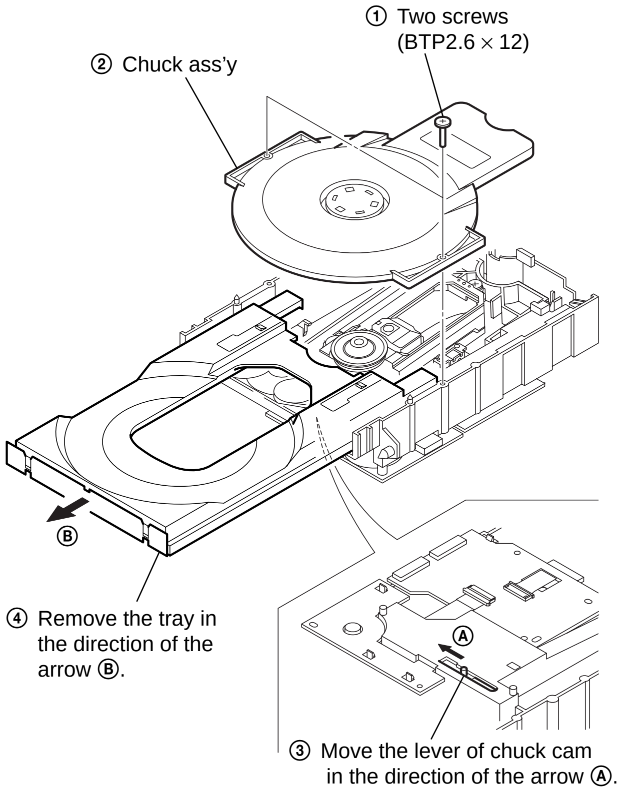
2-6. FRONT PANEL REMOVAL



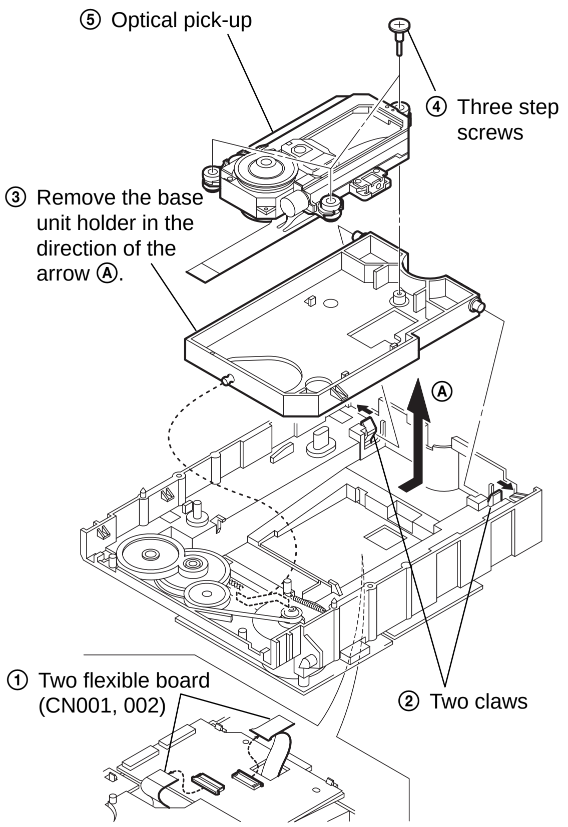
2-7. MECHANISM DECK REMOVAL



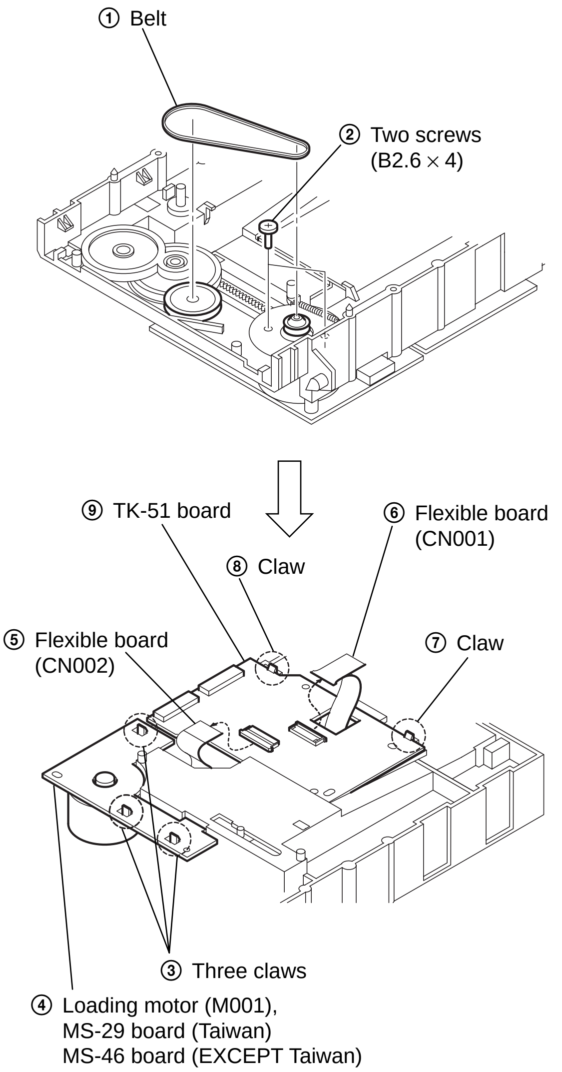
2-8. TRAY REMOVAL



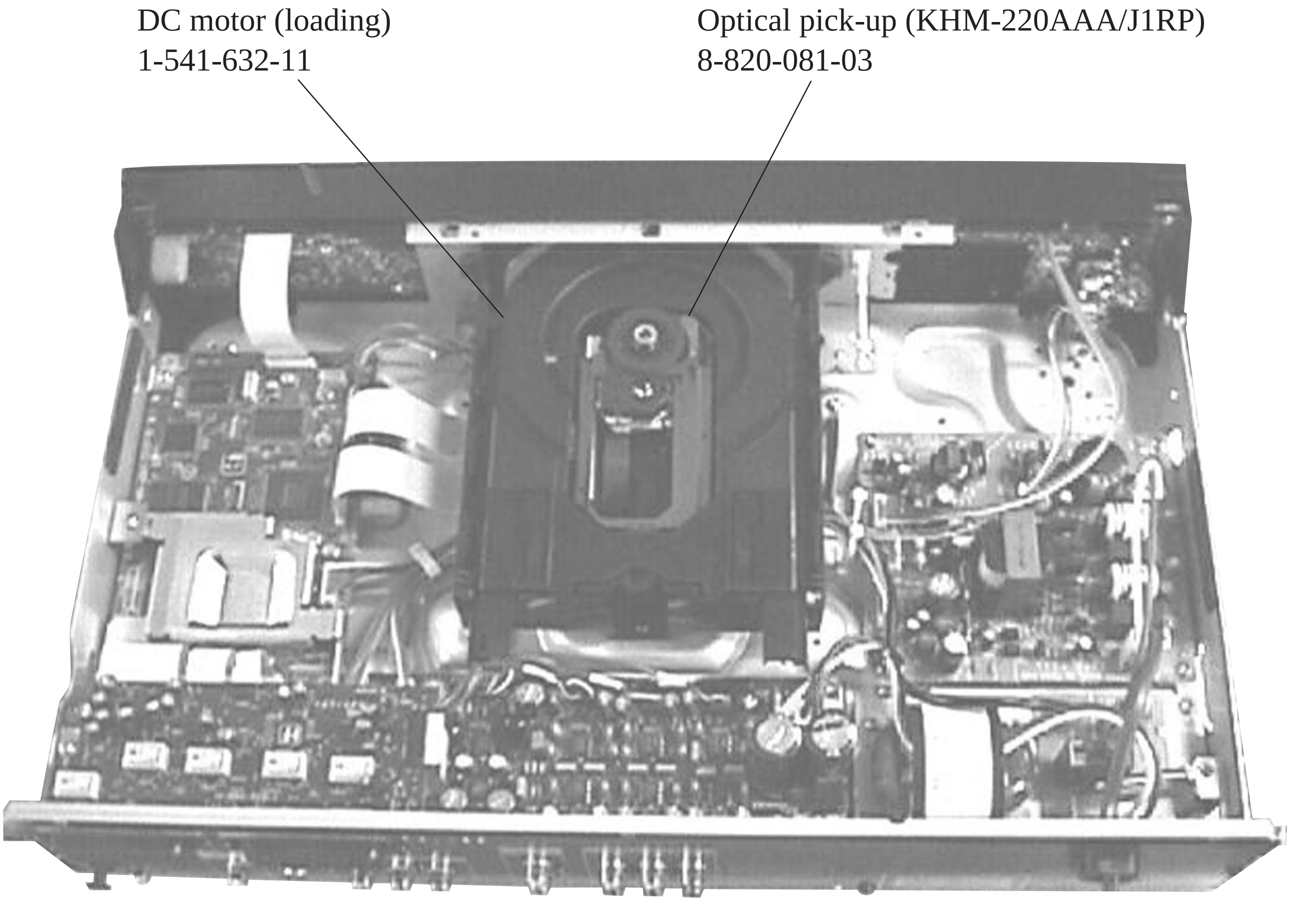
2-9. OPTICAL PICK-UP REMOVAL



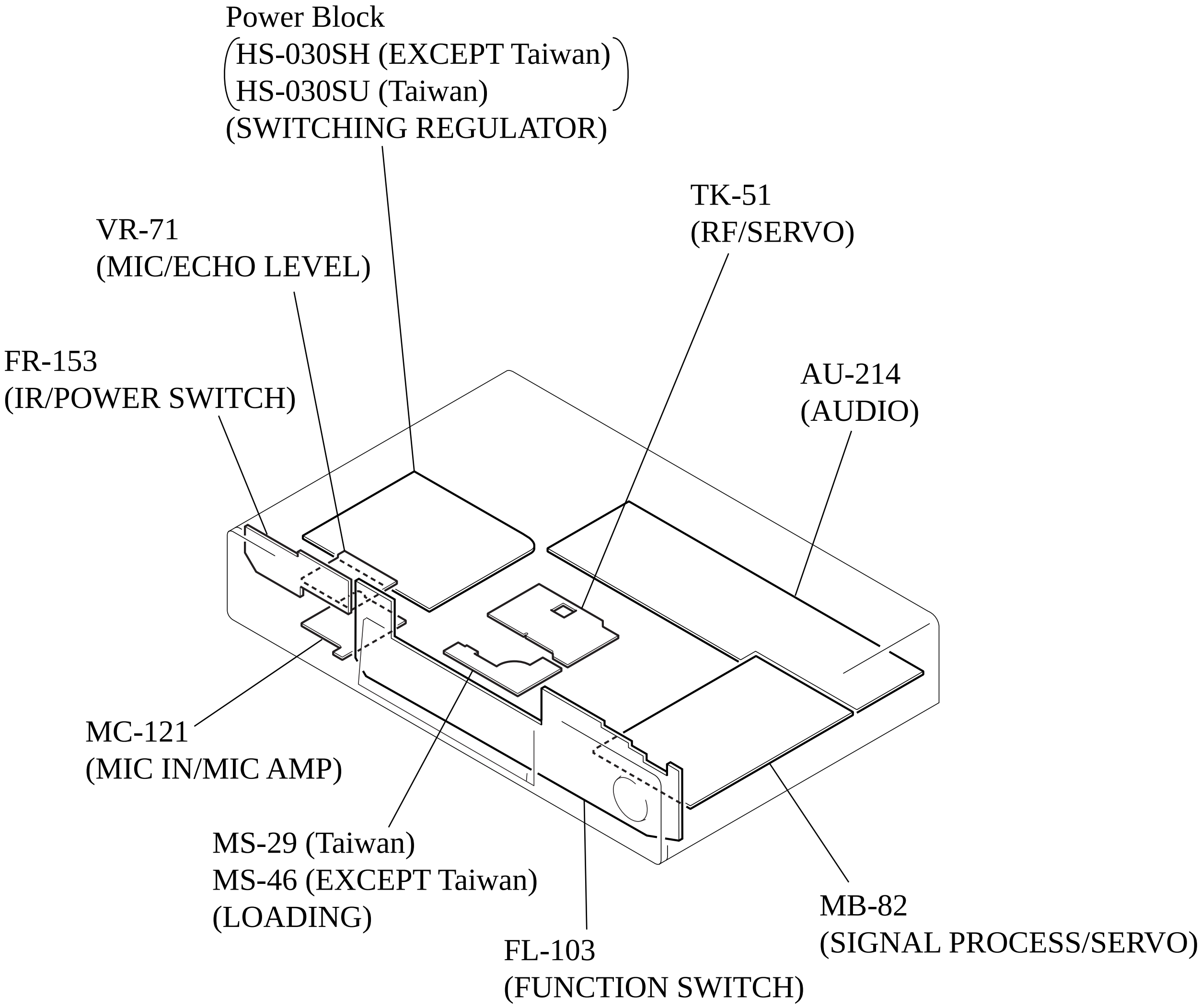
2-10. BELT, LOADING MOTOR (M001), MS-29/46, TK-51 BOARD REMOVAL



2-11. INTERNAL VIEWS

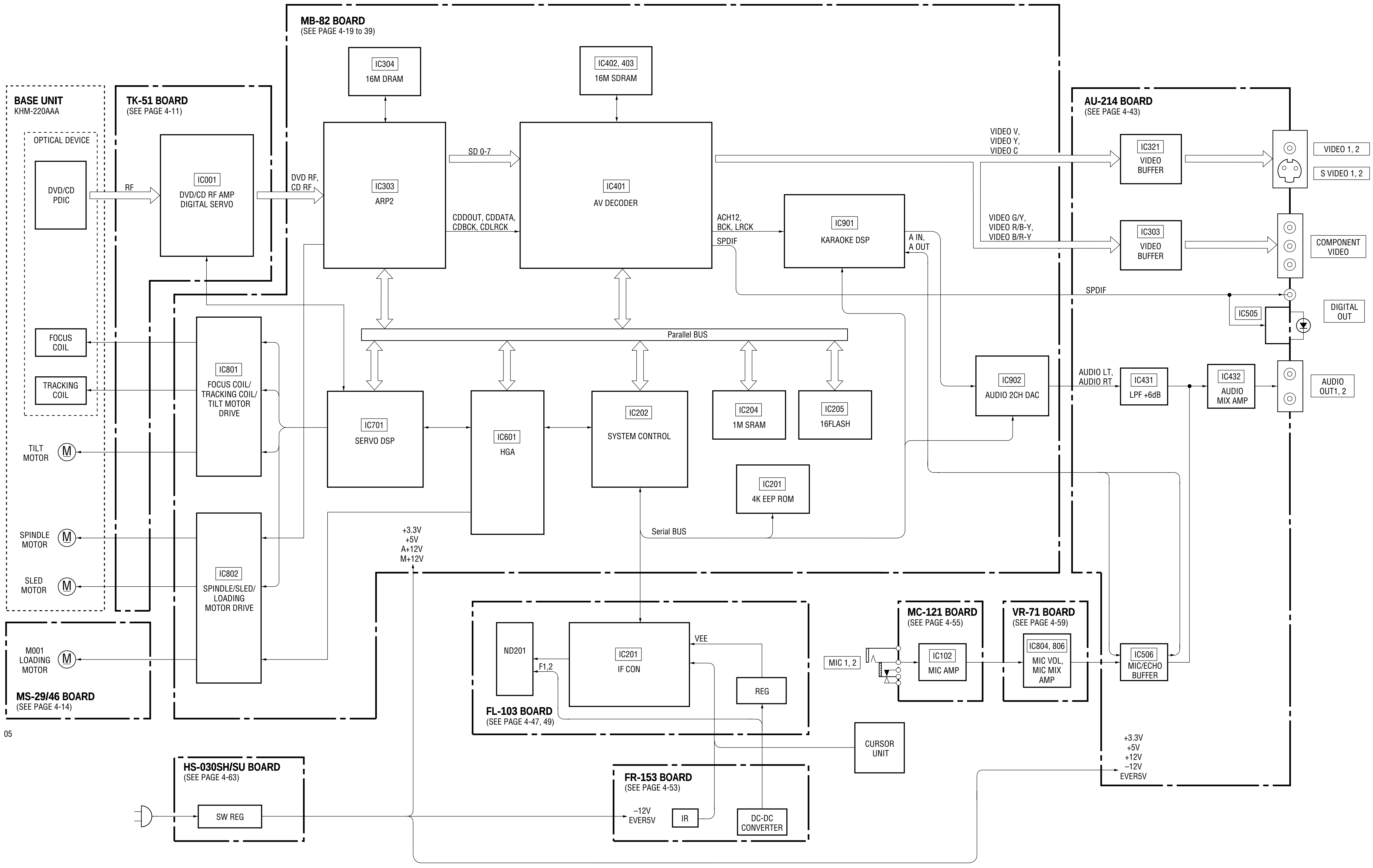


2-12. CIRCUIT BOARDS LOCATION

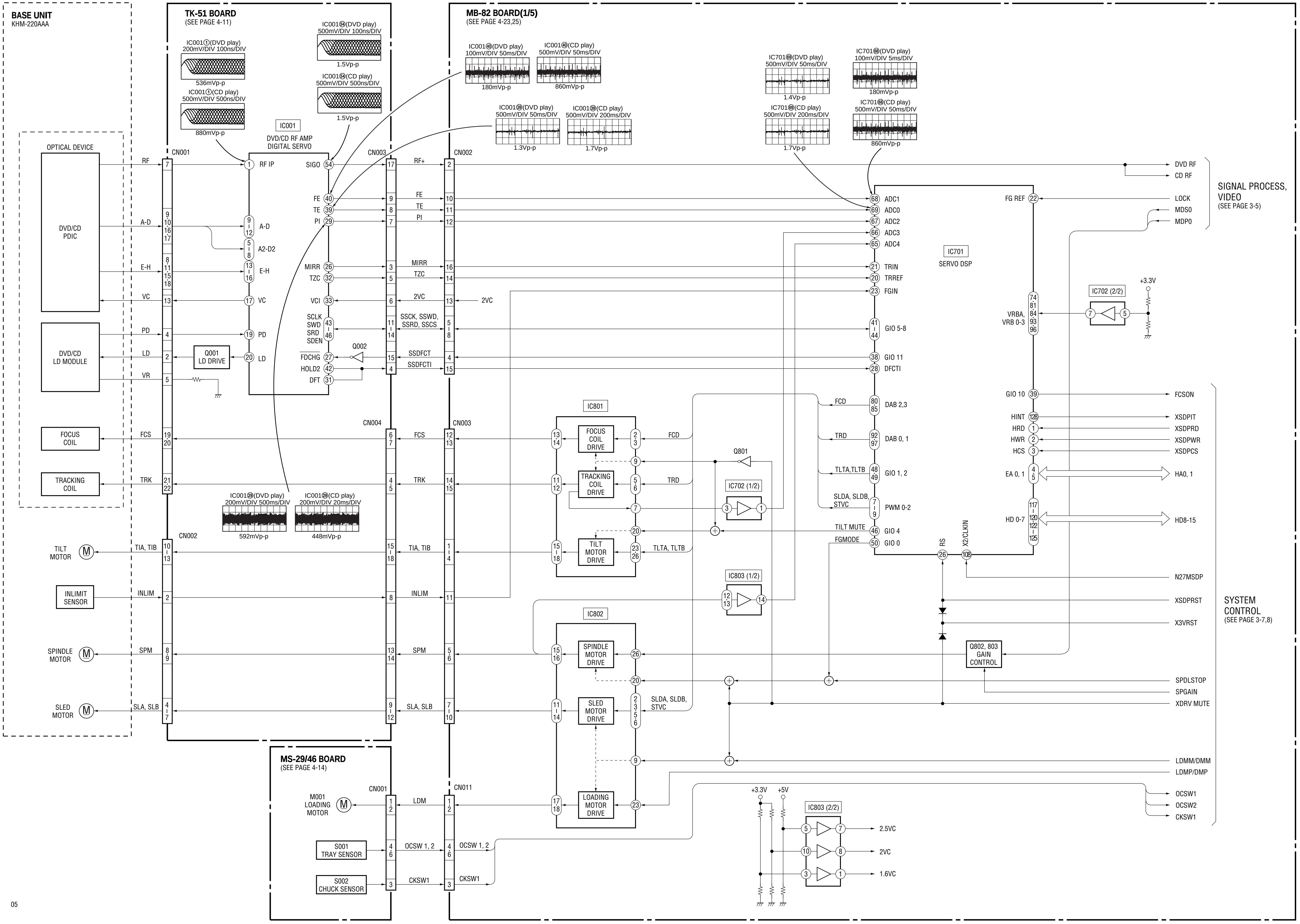


SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

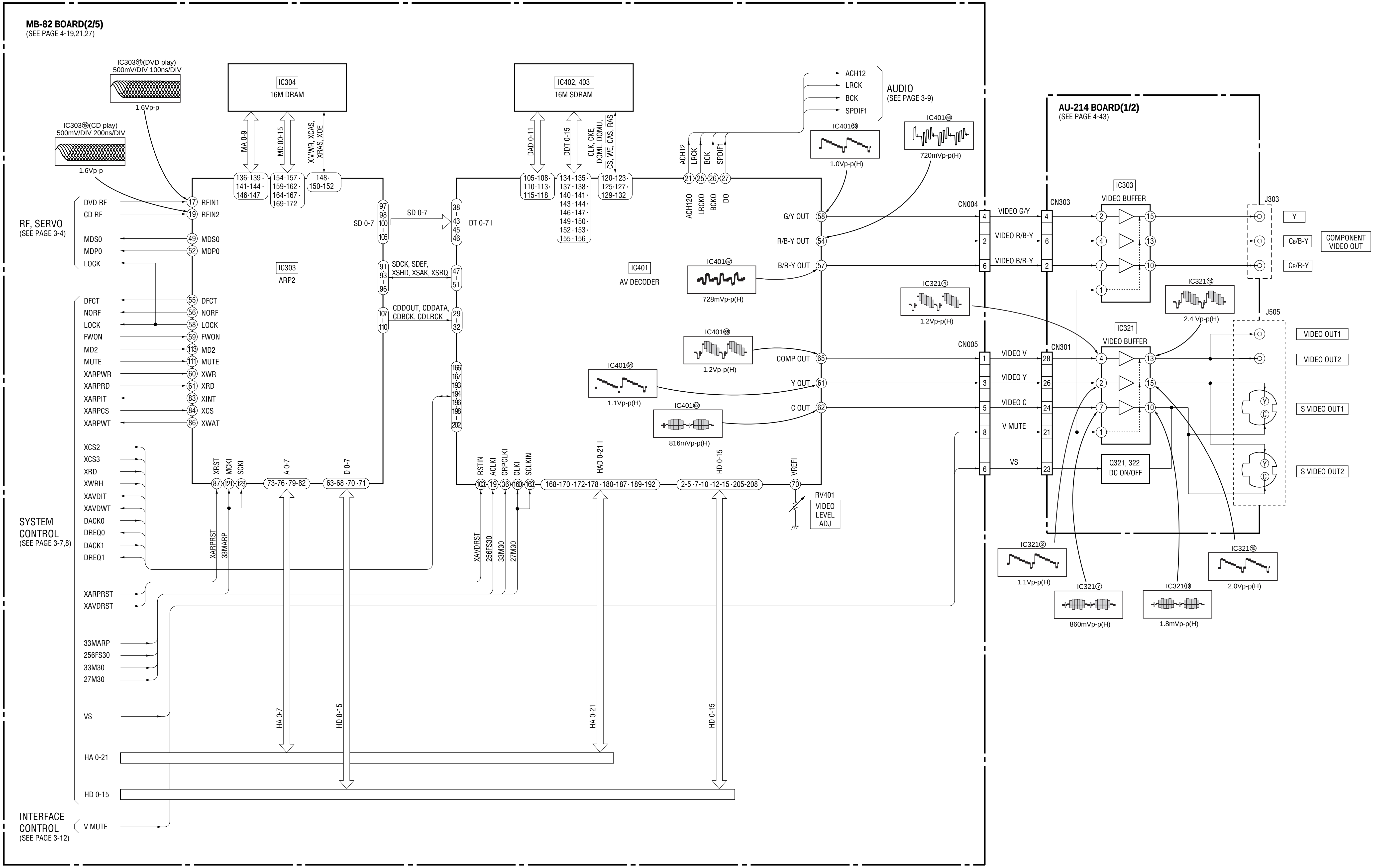


3-2. RF/SERVO BLOCK DIAGRAM



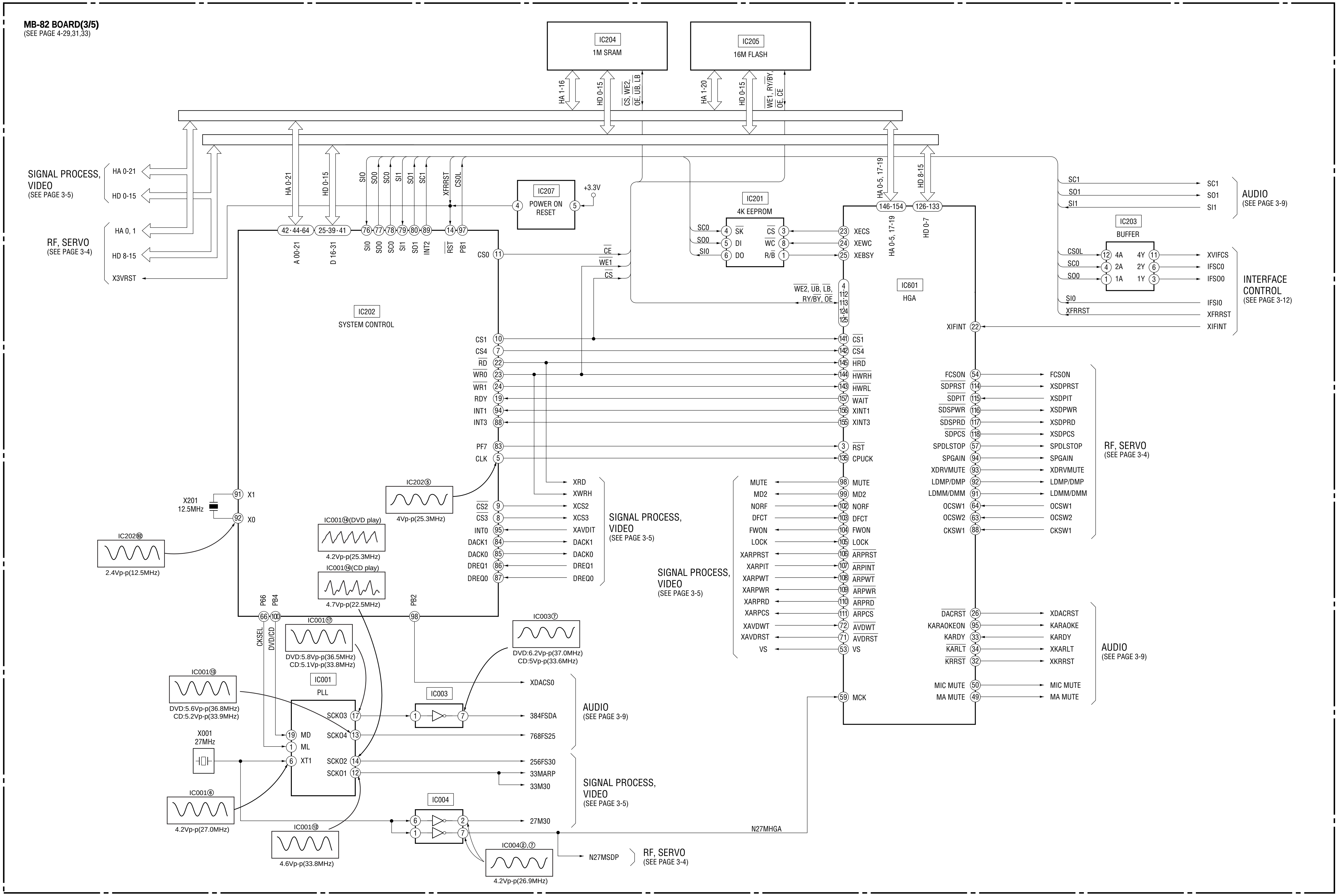
05

3-3. SIGNAL PROCESS/VIDEO BLOCK DIAGRAM



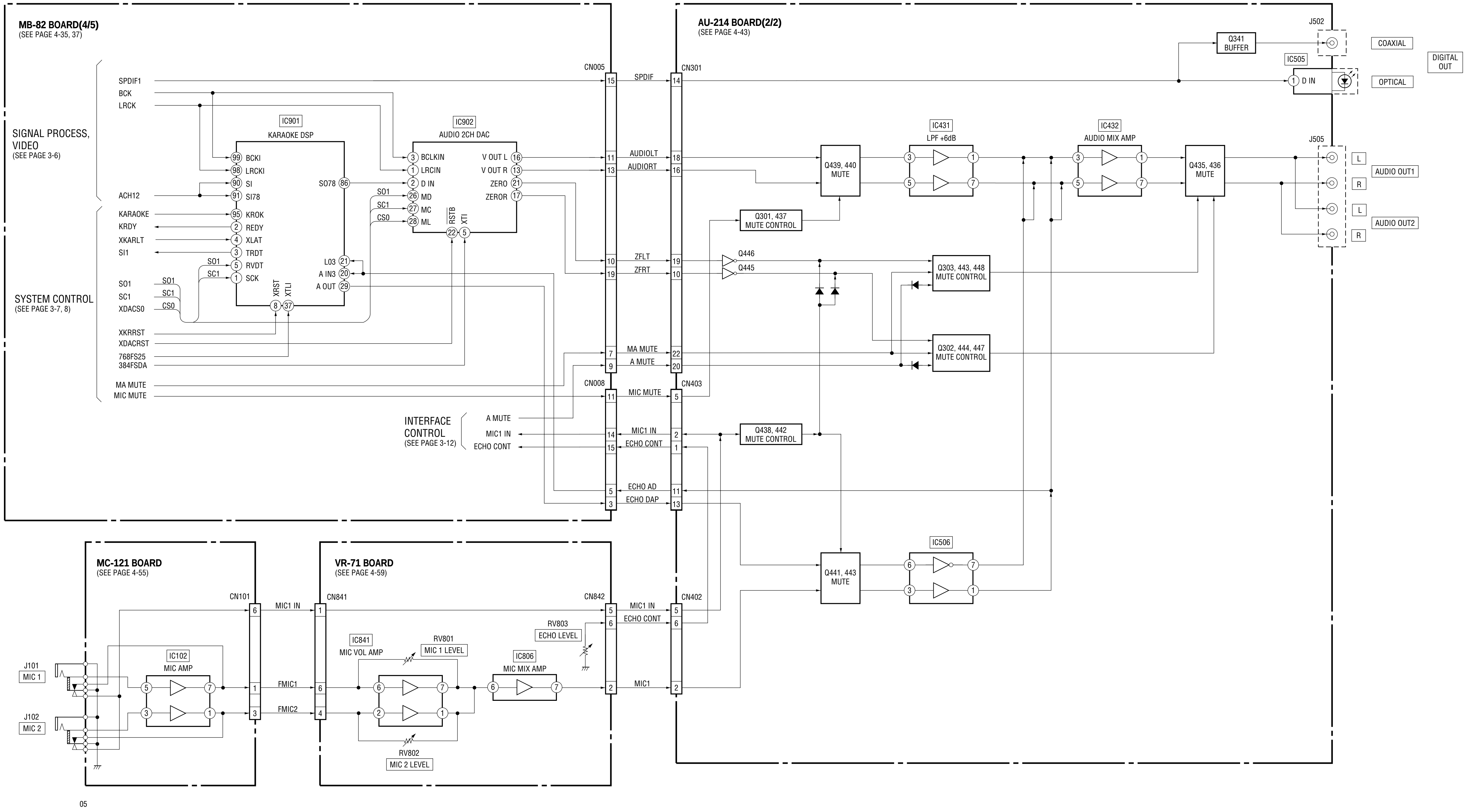
05

3-4. SYSTEM CONTROL BLOCK DIAGRAM

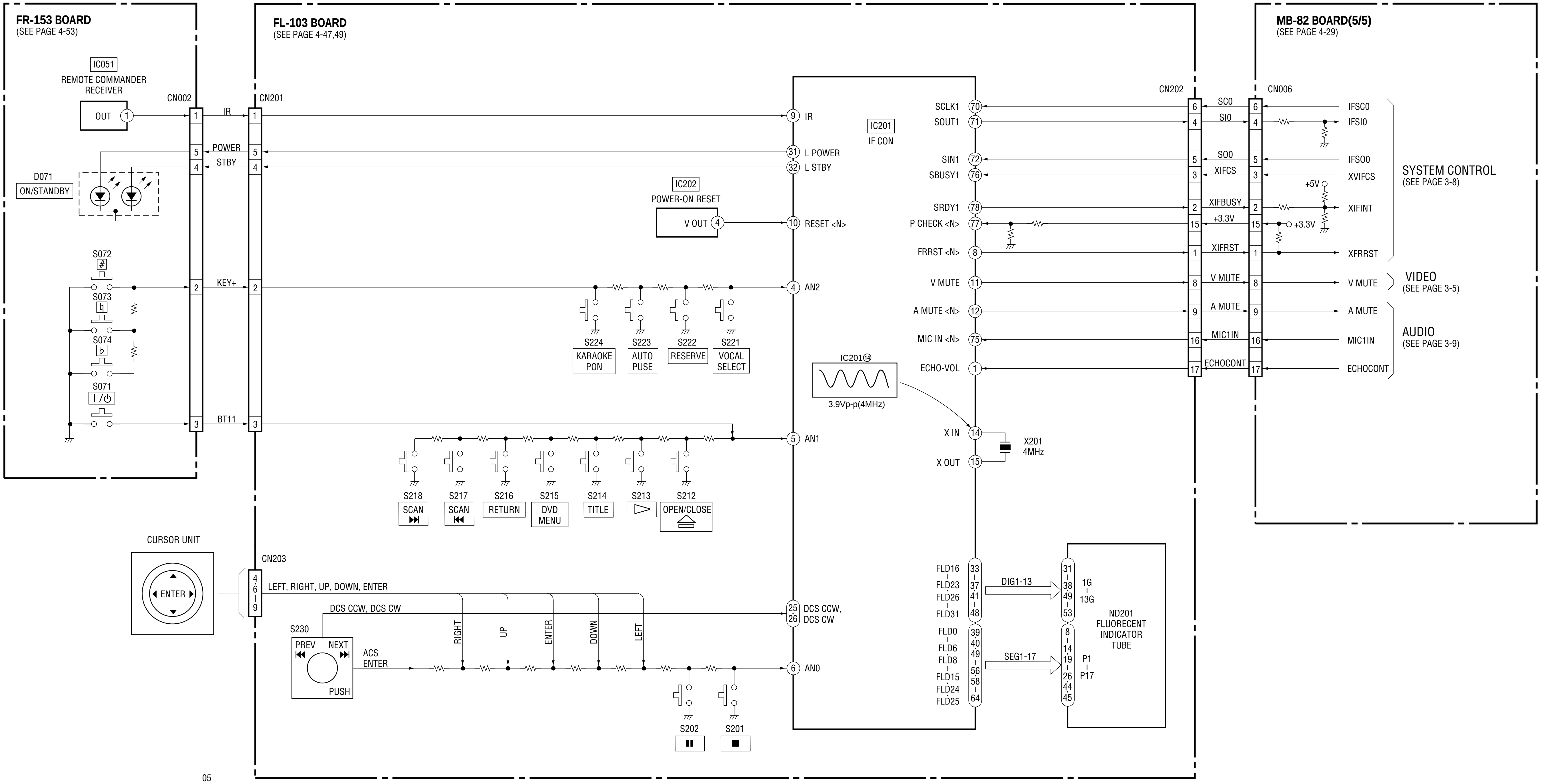


05

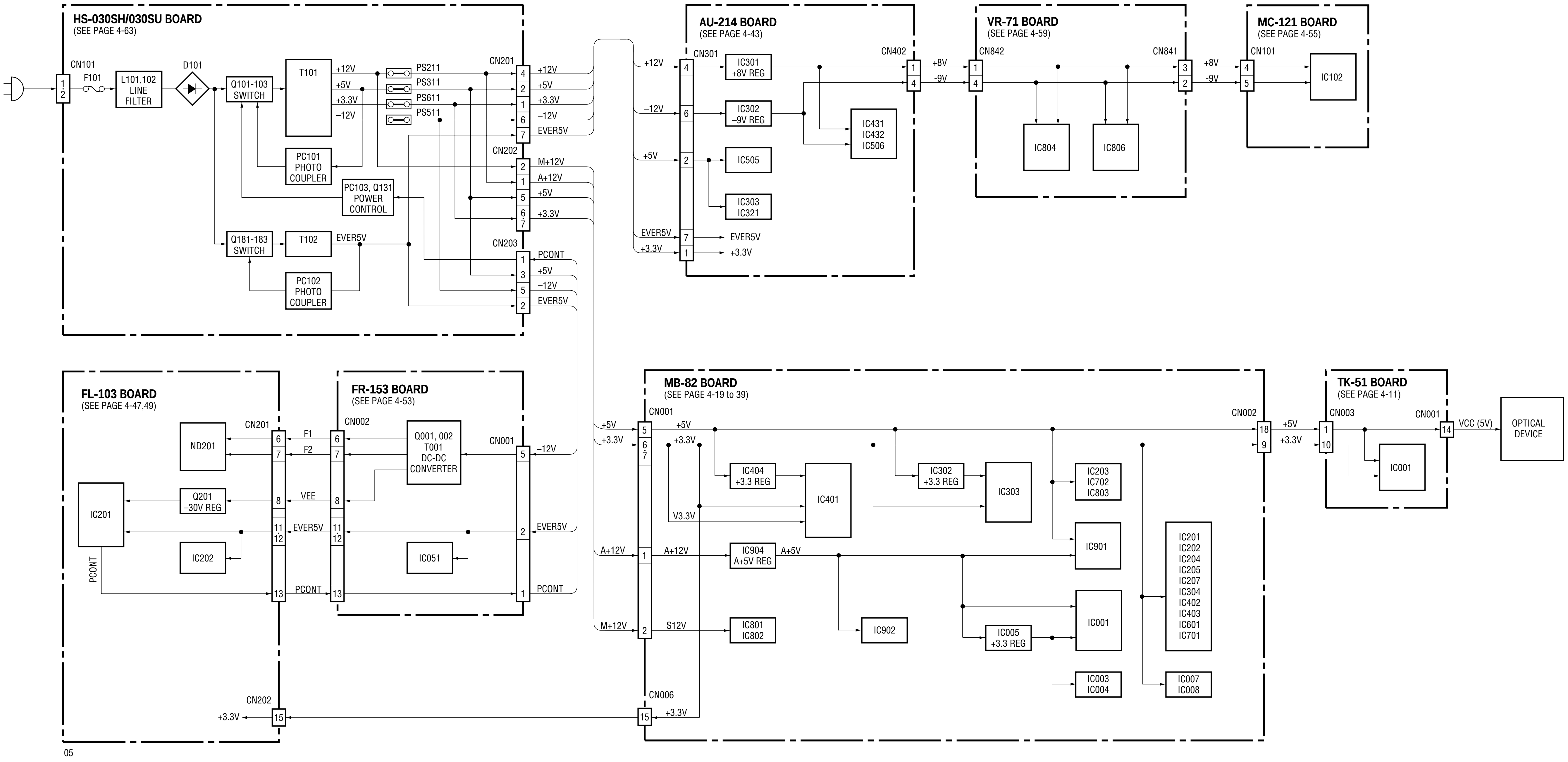
3-5. AUDIO BLOCK DIAGRAM



3-6. INTERFACE CONTROL BLOCK DIAGRAM



3-7. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block)

For printed wiring boards:

- ○—— : indicates a lead wire mounted on the component side.
- ●—— : indicates a lead wire mounted on the printed side.
- ○ : Through hole.
- (shaded pattern) : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

For schematic Diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000 Ω, MΩ : 1000 kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- (nonflammable resistor symbol) : nonflammable resistor.
- (fusible resistor symbol) : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.
- B+ : B+ Line.
- B– : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10 MΩ).
- Voltage variations may be noted due to normal production tolerances.

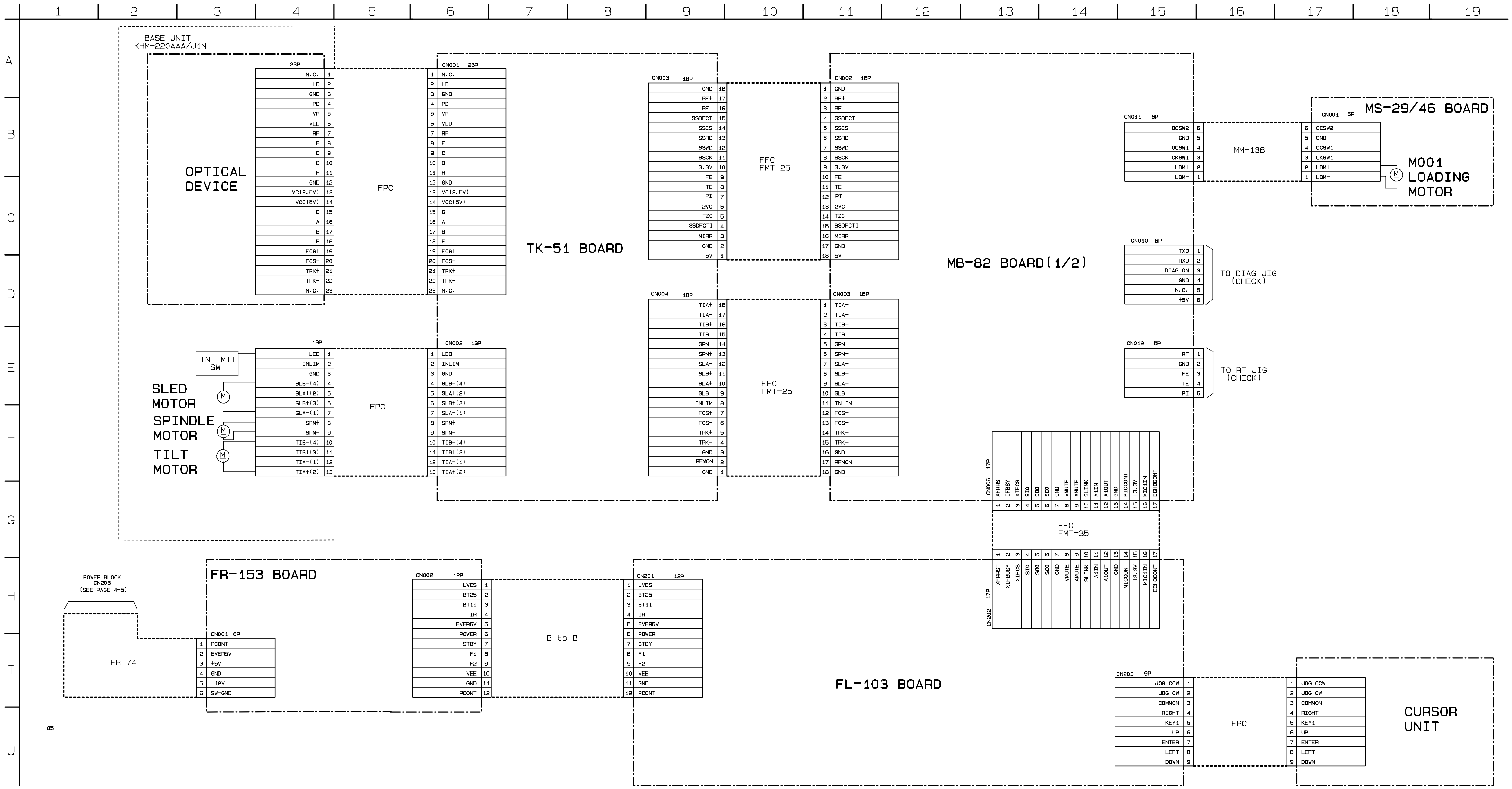
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

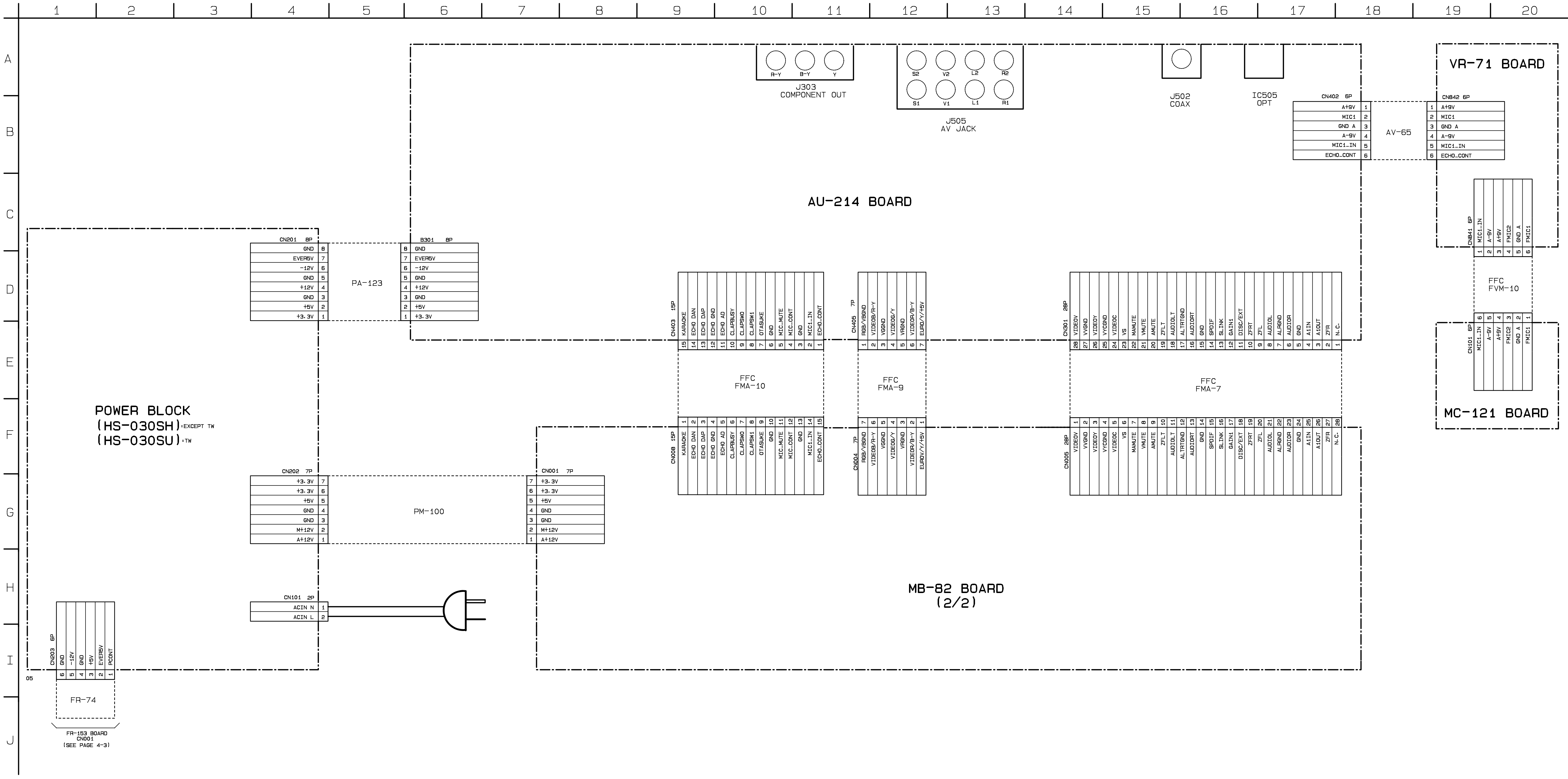
- Abbreviation
  CH : Chinese
  TW : Taiwan

4-1. FRAME SCHEMATIC DIAGRAM

FRAME (1) SCHEMATIC DIAGRAM



FRAME (2) SCHEMATIC DIAGRAM



FRAME (2/2)

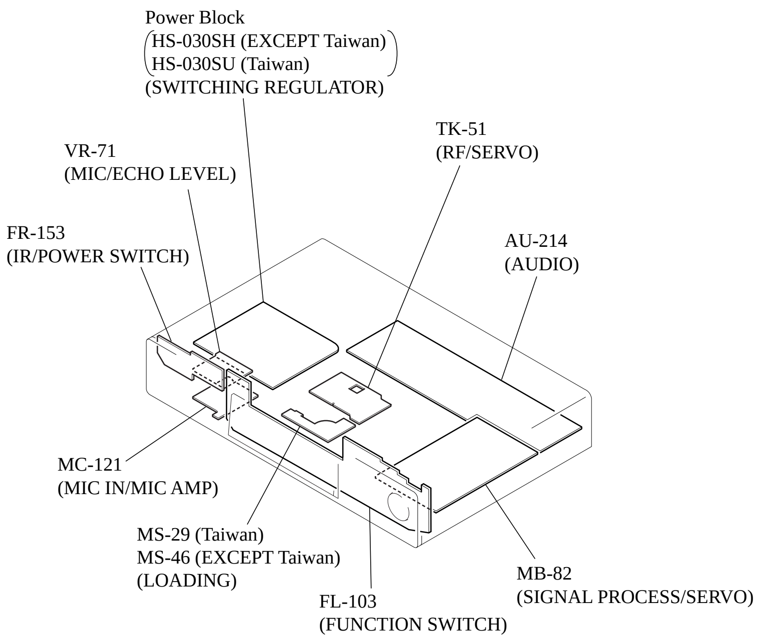
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

TK-51 (RF/SERVO) PRINTED WIRING BOARD

– Ref. No.: TK-51 board; 2,000 series –

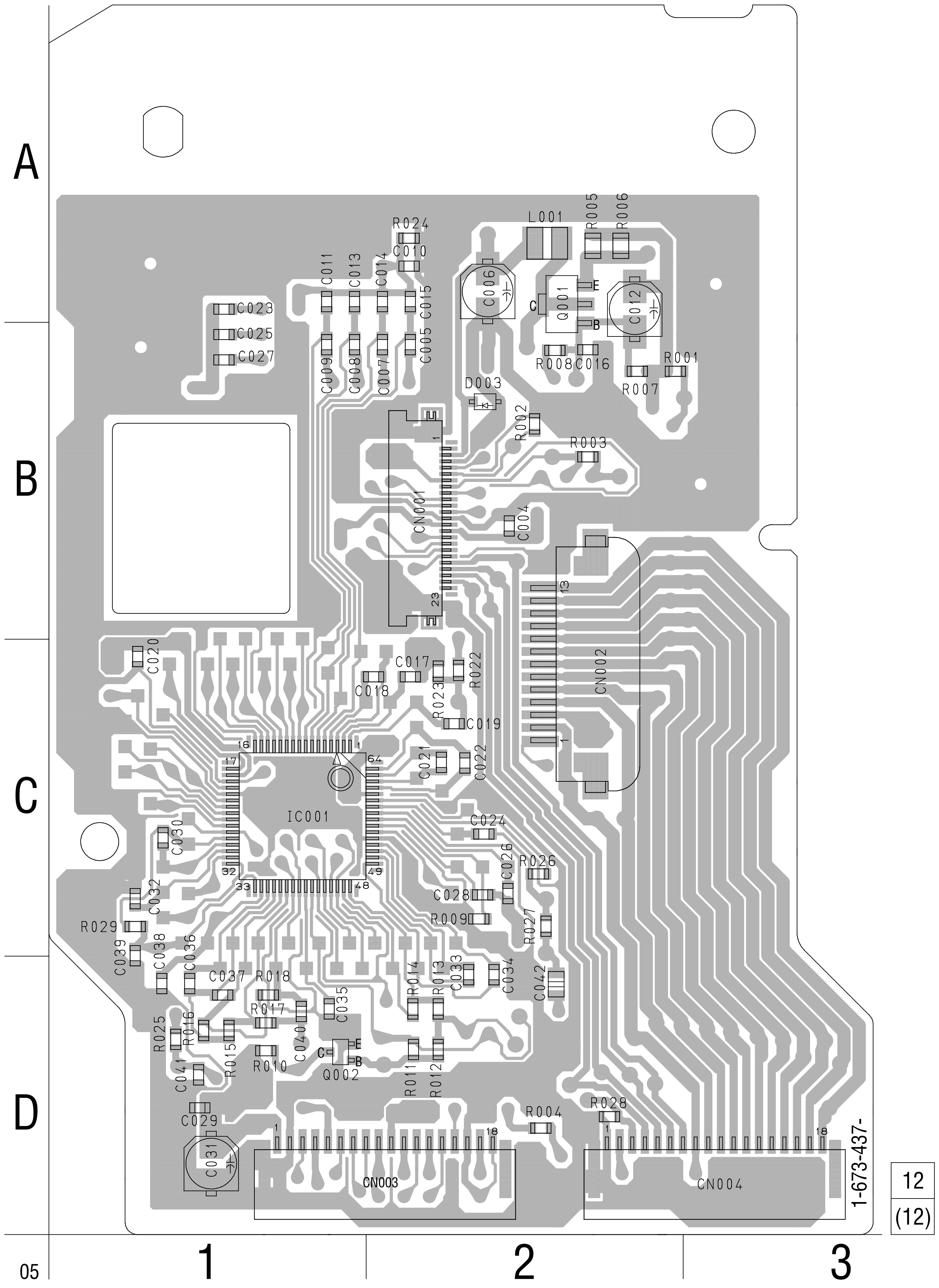
TK-51 BOARD (SIDE A)

CN001	B-2
CN002	C-2
CN003	D-2
CN004	D-3
D003	B-2
IC001	C-1
Q001	A-2
Q002	D-1

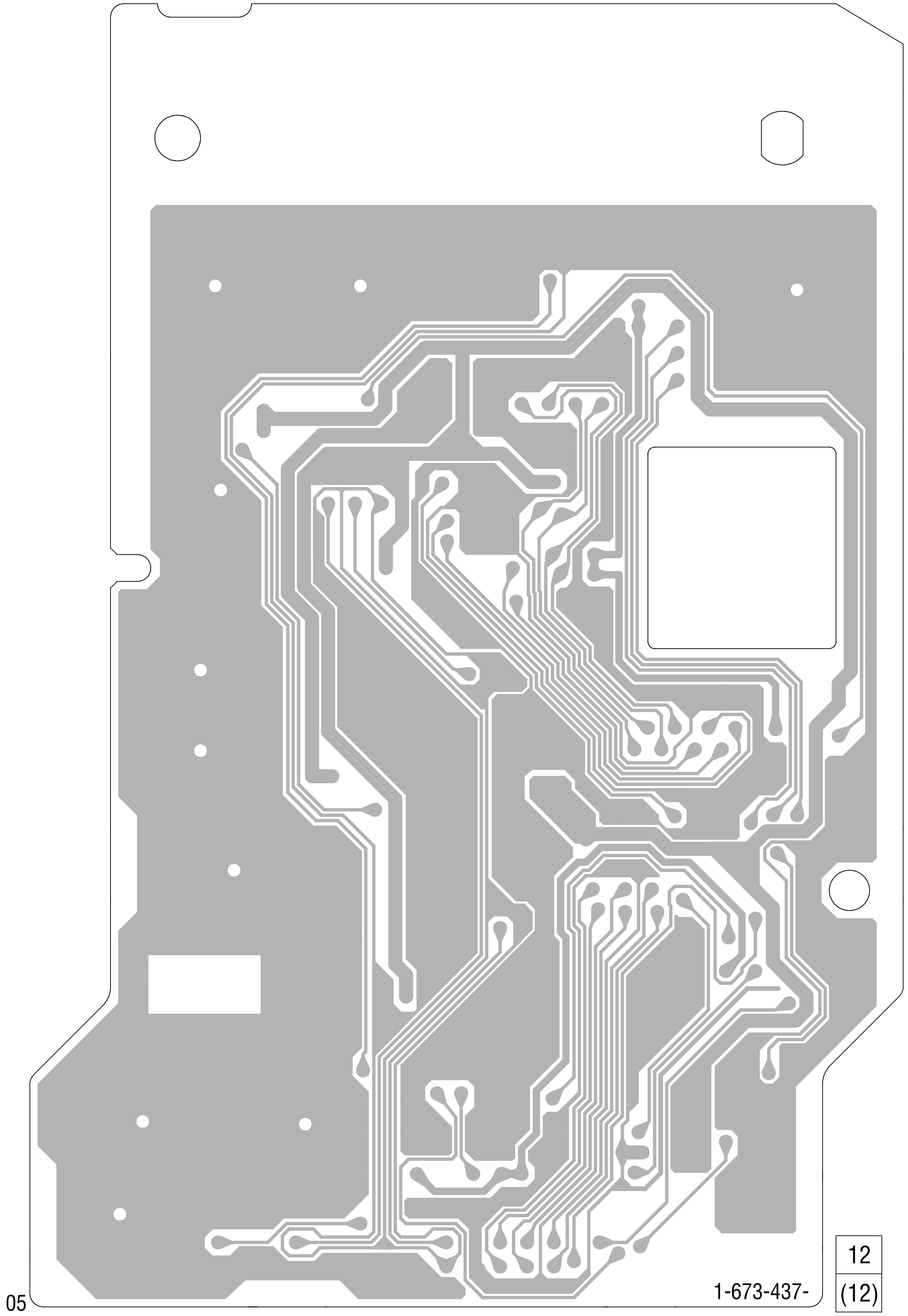


There are few cases that the part isn't mounted in this model is printed on this diagram.

TK-51 BOARD(SIDE A)

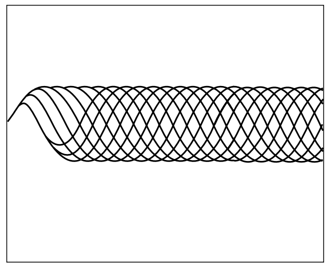


TK-51 BOARD(SIDE B)



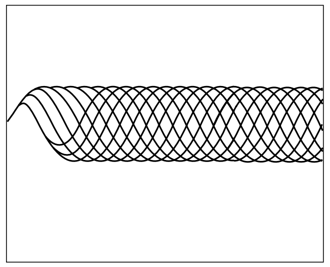
• **Waveforms**

❶ IC001 ① (DVD play)
200 mV/DIV   100 ns/DIV



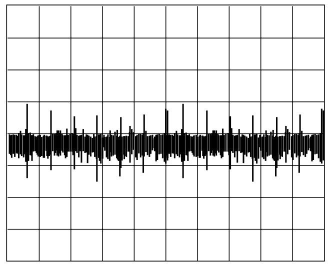
536 mVp-p

❷ IC001 ① (CD play)
500 mV/DIV   500 ns/DIV



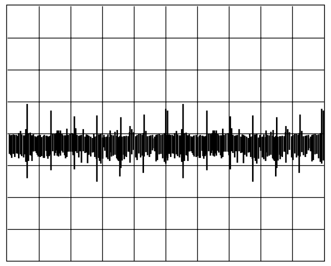
880 mVp-p

❸ IC001 ㉙ (DVD play)
200 mV/DIV   500 ms/DIV



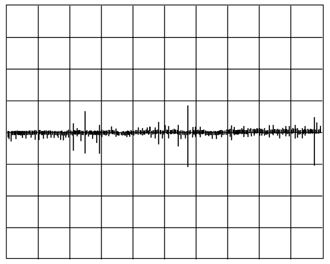
592 mVp-p

❹ IC001 ㉙ (CD play)
200 mV/DIV   20 ms/DIV



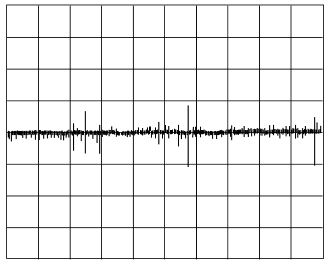
448 mVp-p

❺ IC001 ㊴ (DVD play)
500 mV/DIV   50 ms/DIV



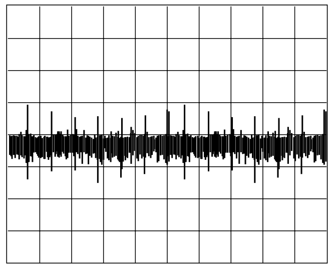
1.3 Vp-p

❻ IC001 ㊴ (CD play)
500 mV/DIV   200 ms/DIV



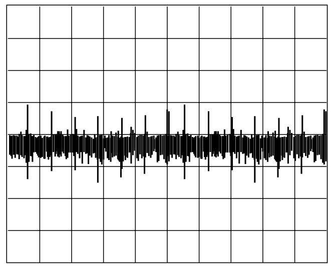
1.7 Vp-p

❼ IC001 ㊵ (DVD play)
100 mV/DIV   50 ms/DIV



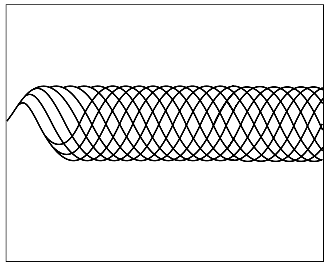
180 mVp-p

❽ IC001 ㊵ (CD play)
500 mV/DIV   50 ms/DIV



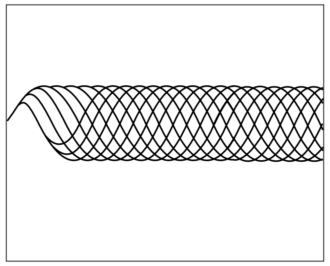
860 mVp-p

❾ IC001 (54) (DVD play)
500 mV/DIV   100 ns/DIV



1.5 Vp-p

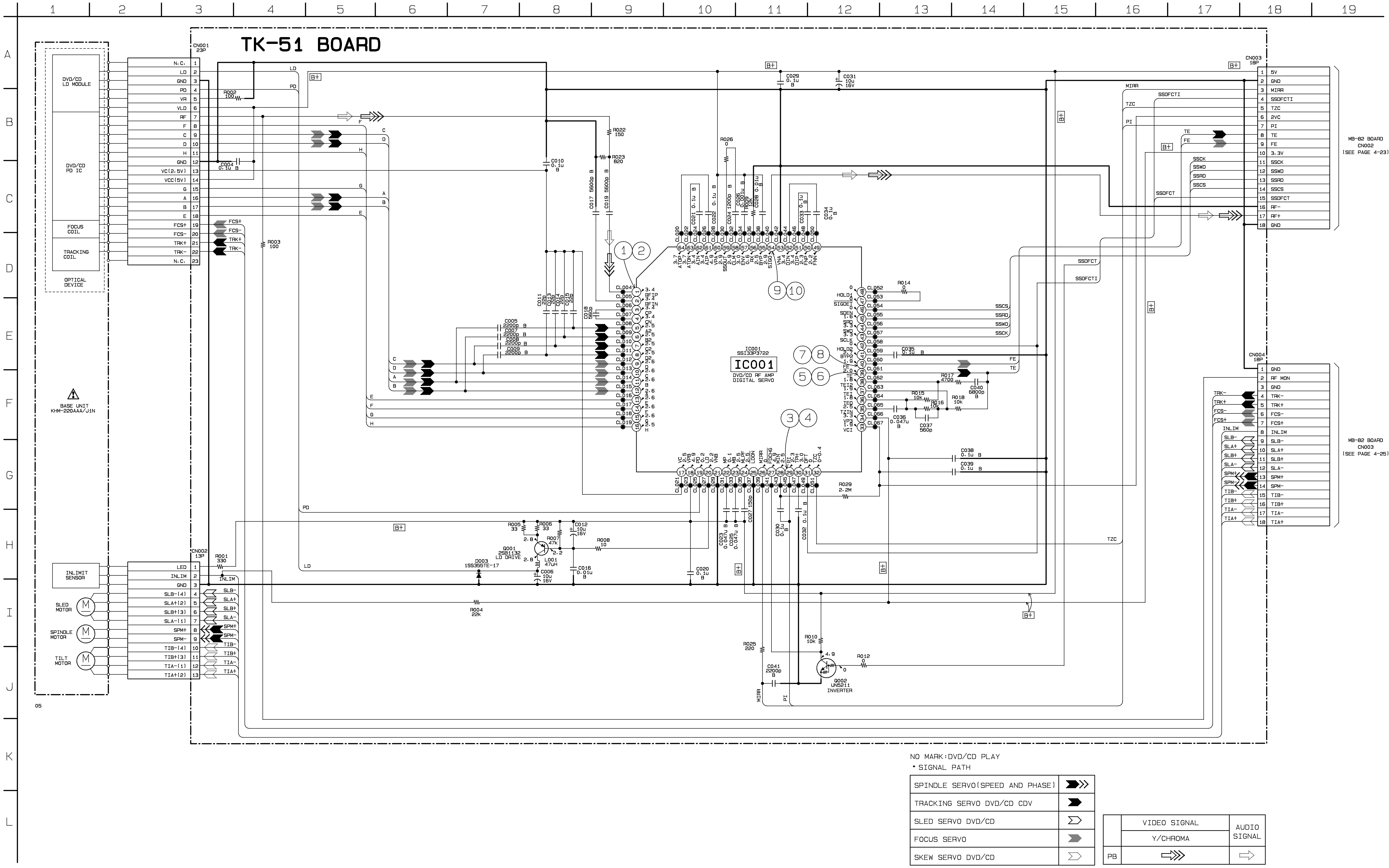
❿ IC001 (54) (CD play)
500 mV/DIV   500 ns/DIV



1.5 Vp-p

TK-51 (RF/SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board and page 4-10 for waveforms.

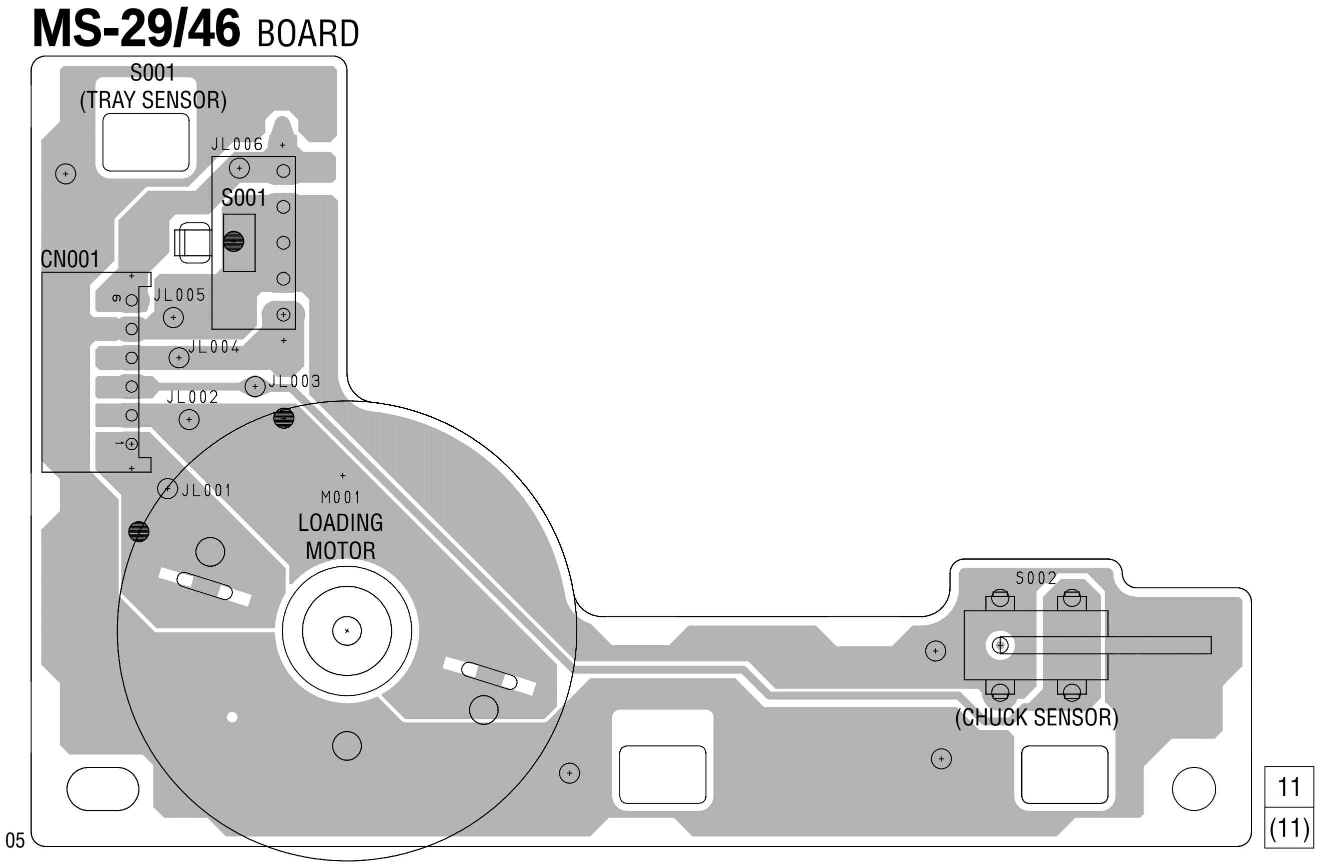
– Ref. No.: TK-51 board; 2,000 series –



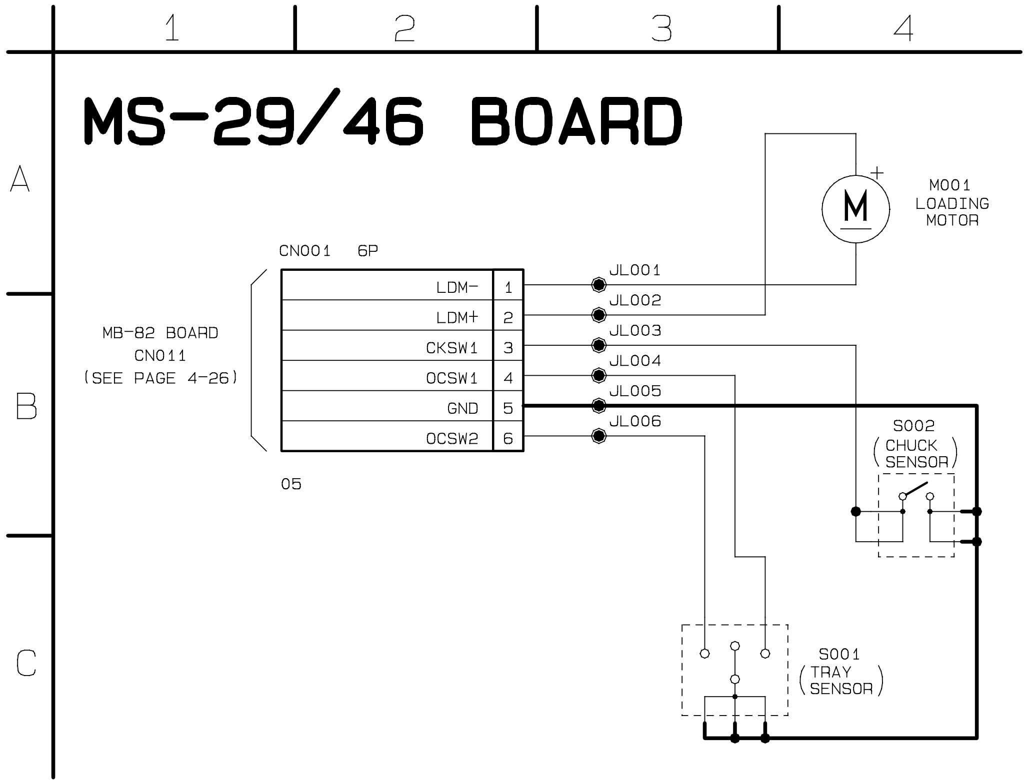
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

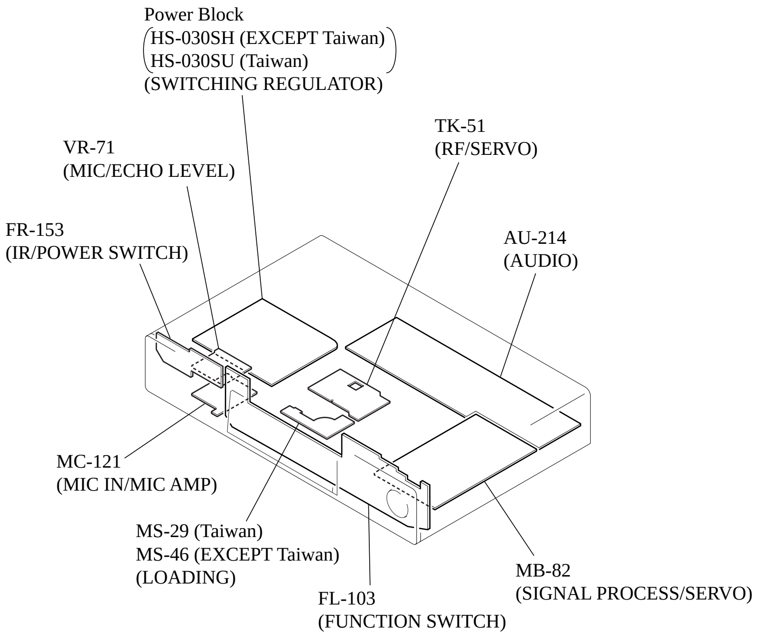
MS-29/46 (LOADING) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: MS-29/46 board; 3,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.



MS-29:1-672-678-
MS-46:1-675-146-





MB-82 (SIGNAL PROCESS) PRINTED WIRING BOARD

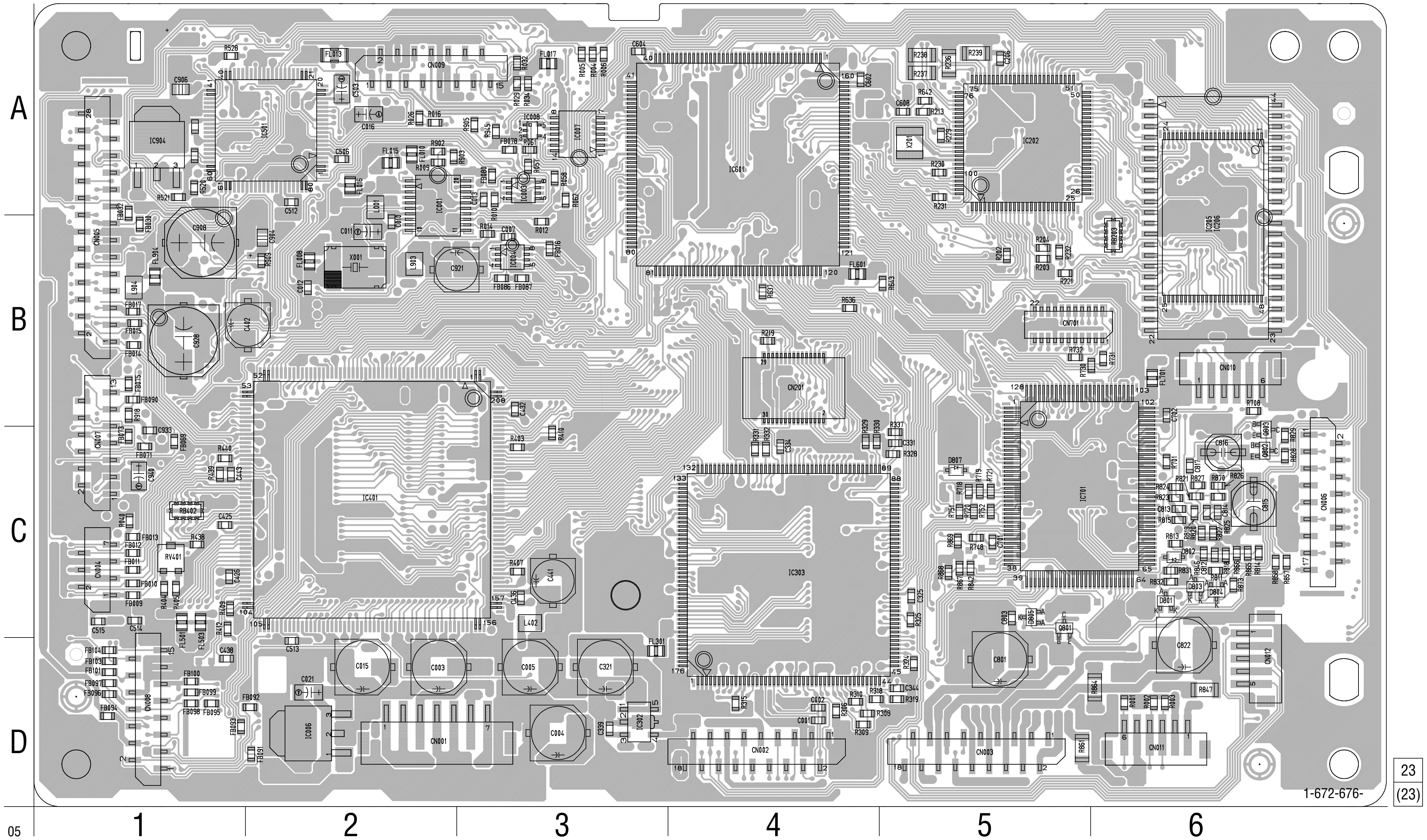
– Ref. No.: MB-82 board; 1,000 series –

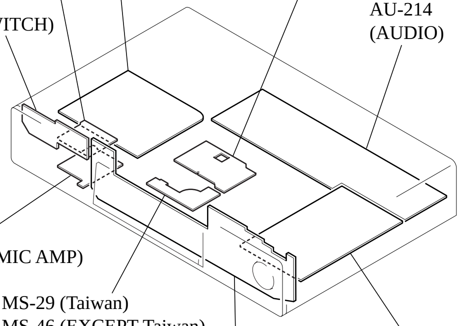
There are few cases that the part isn't mounted in this model is printed on this diagram.

MB-82 BOARD (SIDE A)

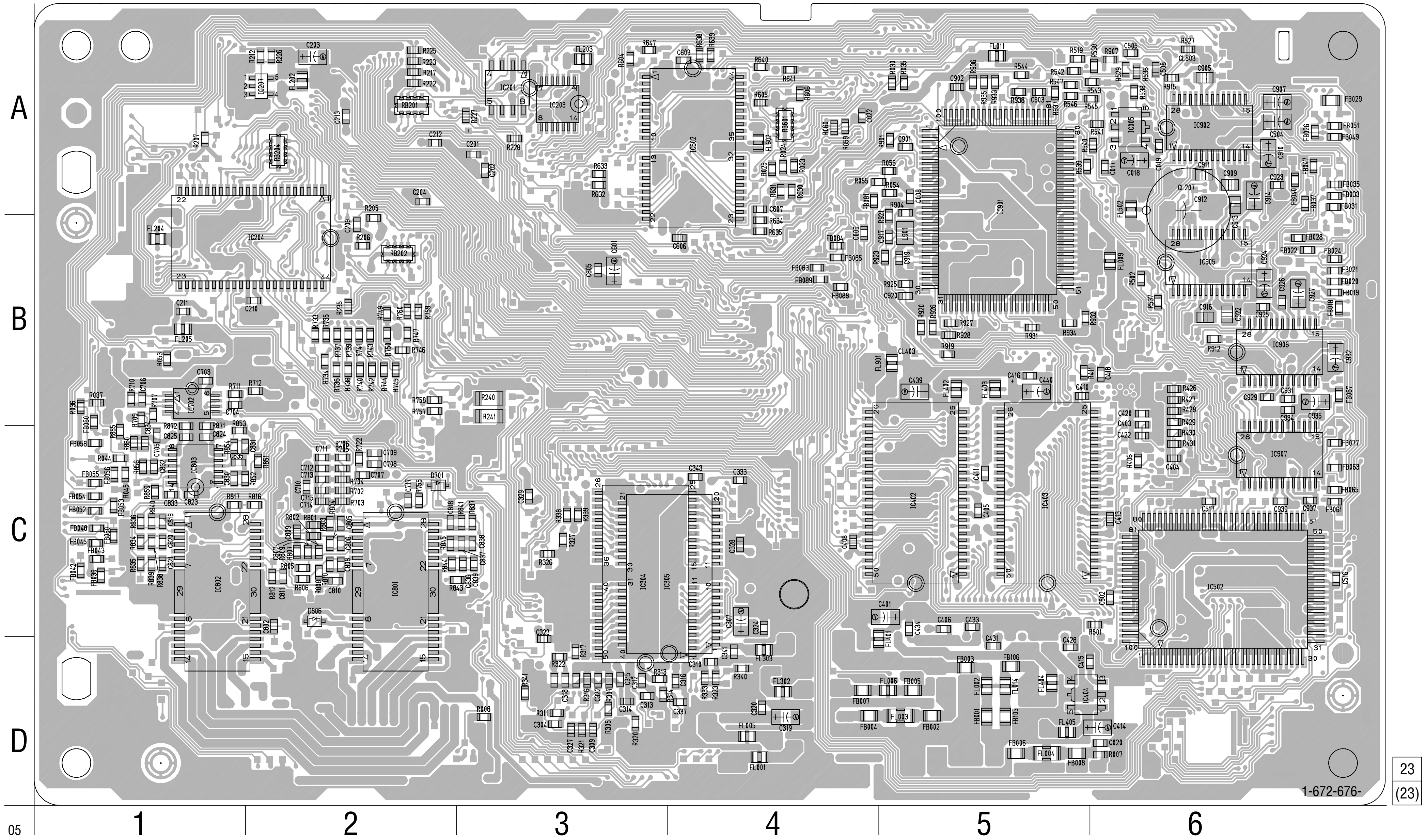
CN001	D-2
CN002	D-4
CN003	D-5
CN004	C-1
CN005	B-1
CN006	C-7
CN008	D-1
CN010	B-6
CN011	D-6
CN012	D-6
D801	C-6
D802	C-6
D803	C-6
D804	C-6
D805	C-5
D807	C-5
IC001	A-2
IC003	A-3
IC004	B-3
IC202	A-5
IC205	A-6
IC302	D-3
IC303	C-4
IC401	C-2
IC601	A-4
IC701	C-5
IC904	A-1
Q801	C-5
Q802	C-6
Q803	C-6

MB-82 BOARD(SIDE A)





MB-82 BOARD(SIDE B)

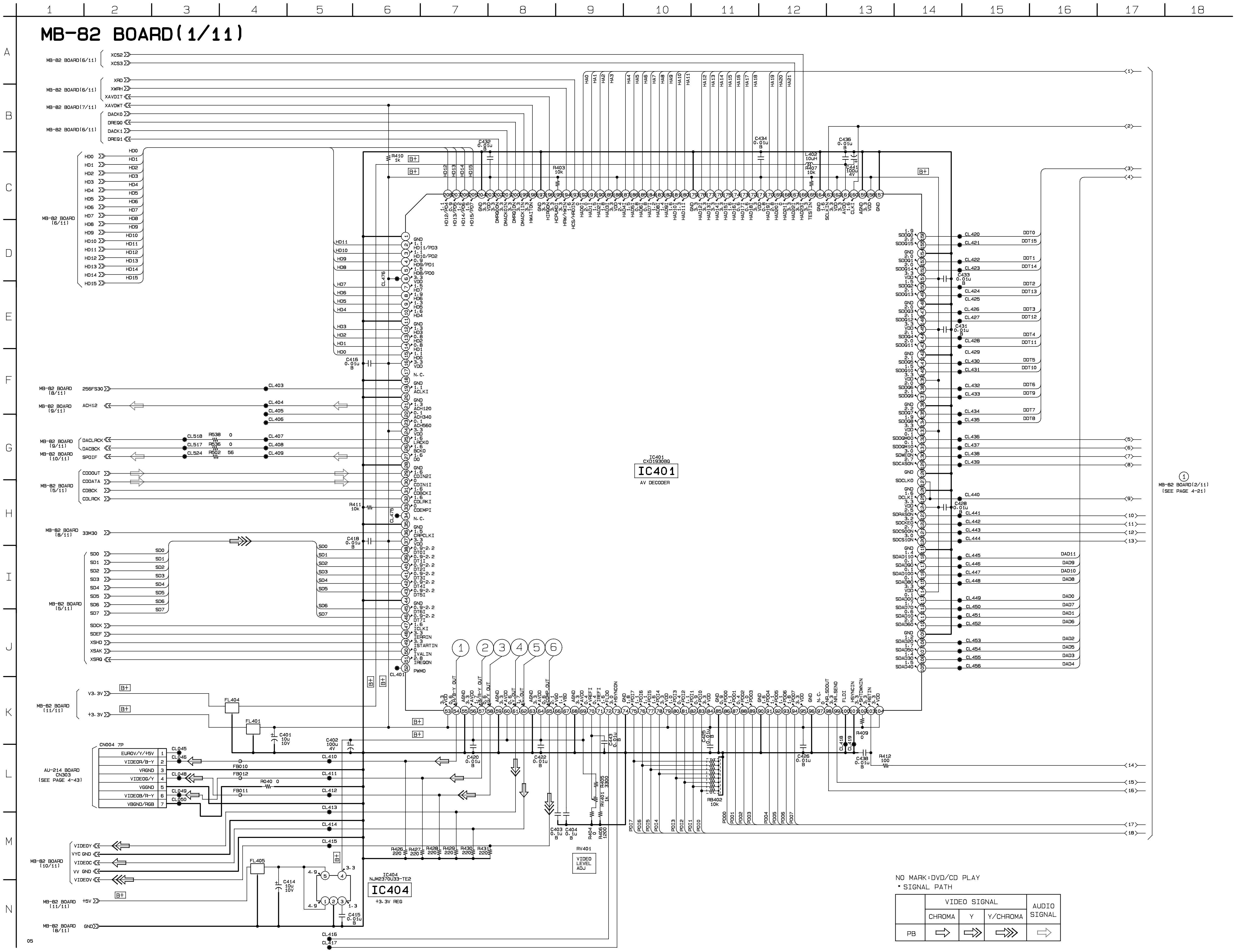


MB-82 BOARD (SIDE B)

D701	C-2
D806	C-2
IC005	A-6
IC201	A-3
IC203	A-3
IC204	B-2
IC207	A-2
IC304	C-3
IC402	C-5
IC403	C-5
IC404	D-6
IC702	B-1
IC801	C-2
IC802	C-1
IC803	C-1
IC901	A-5
IC902	A-6

MB-82 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

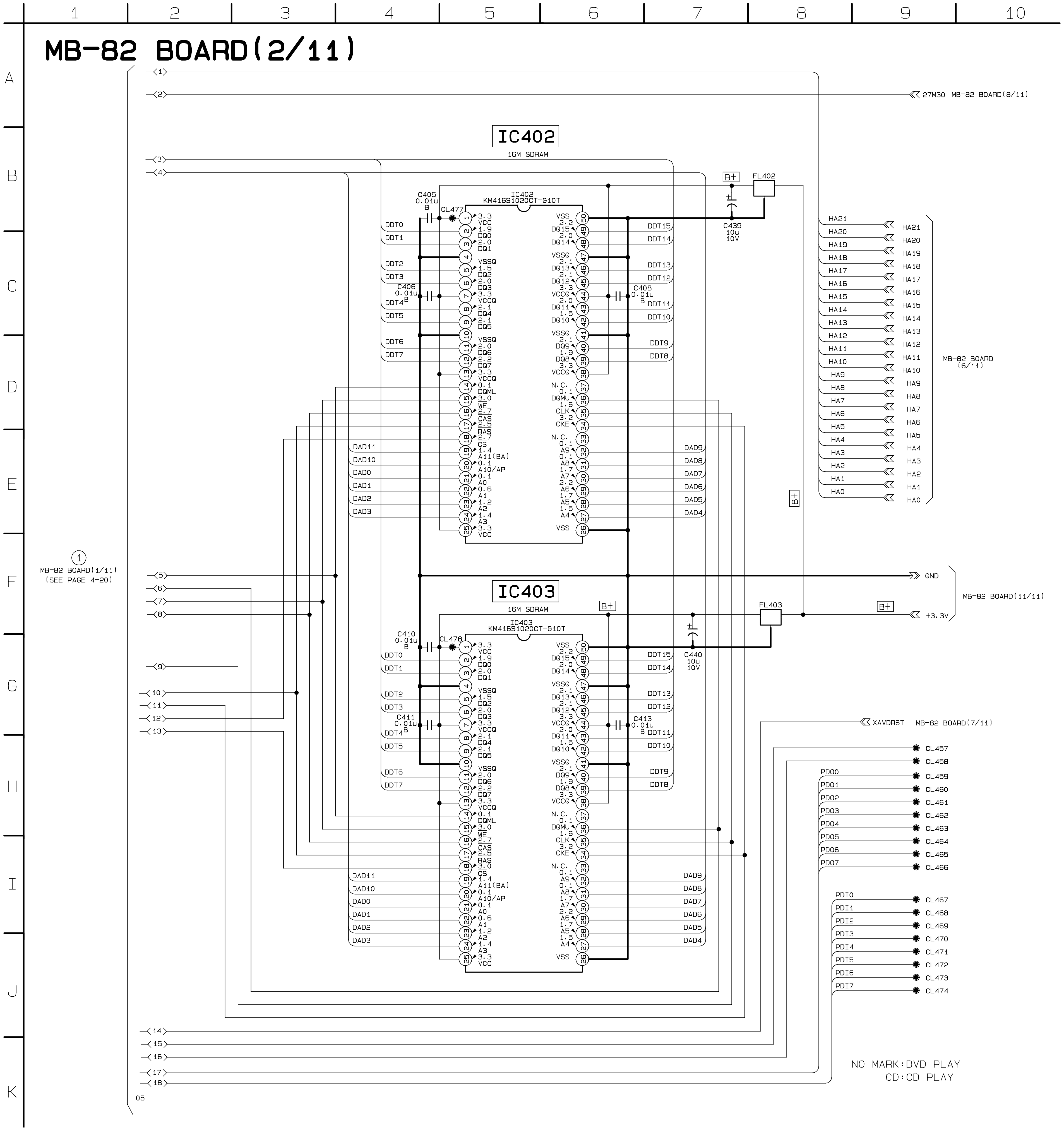
– Ref. No.: MB-82 board; 1,000 series –



AV DECODER
MB-82 (1/11)

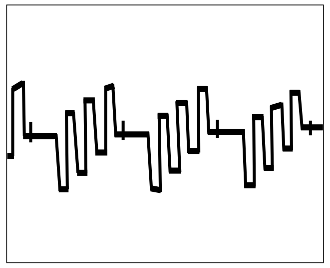
MB-82 (SDRAM) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –



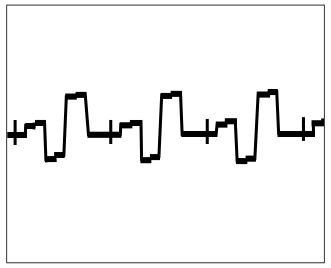
• Waveforms

❶ IC401 ⑭



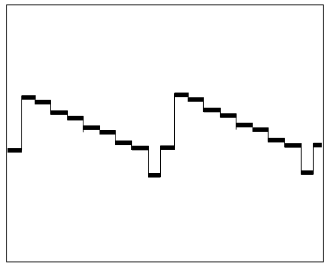
720 mVp-p (H)

❷ IC401 ⑰



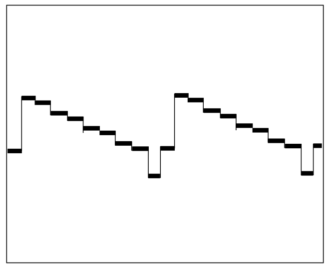
728 mVp-p (H)

❸ IC401 ⑱



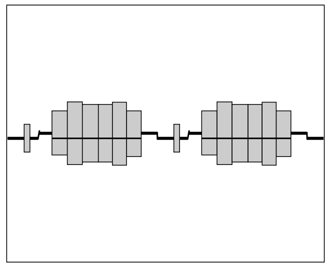
1.0 Vp-p (H)

❹ IC401 ㉑



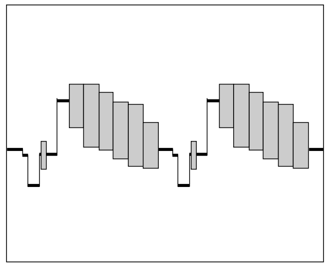
1.1 Vp-p (H)

❺ IC401 ㉒



816 mVp-p (H)

❻ IC401 ㉕



1.2 Vp-p (H)

SDRAM
MB-82 (2/11)

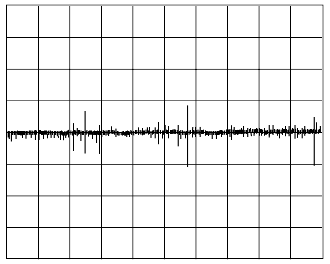
MB-82 (SERVO DSP) SCHEMATIC DIAGRAM

• See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –

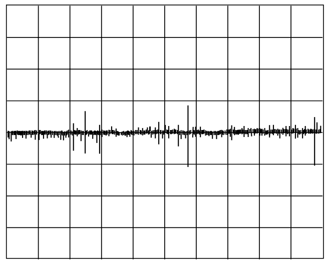
• Waveforms

❶ IC701 ⑬ (DVD play)
500 mV/DIV 50 ms/DIV



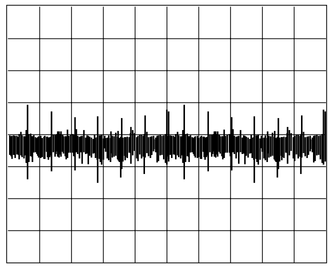
1.4 Vp-p

❷ IC701 ⑬ (CD play)
500 mV/DIV 200 mV/DIV



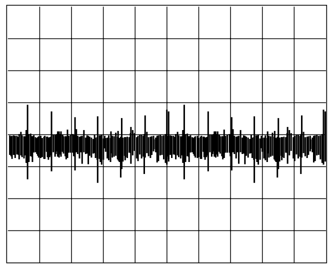
1.7 Vp-p

❸ IC701 ⑫ (DVD play)
100 mV/DIV 5 ms/DIV

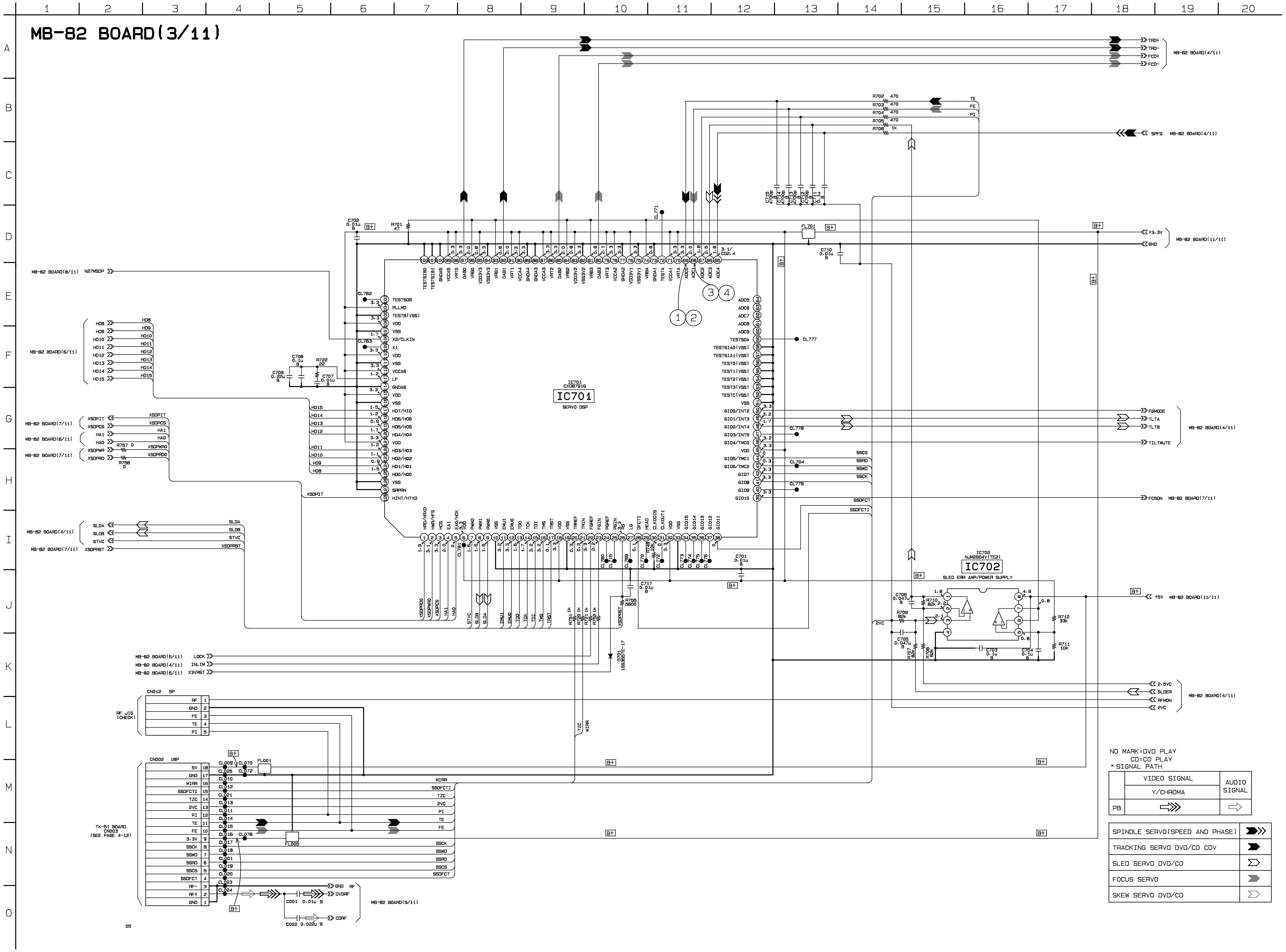


180 mVp-p

❹ IC701 ⑫ (CD play)
500 mV/DIV 50 ms/DIV

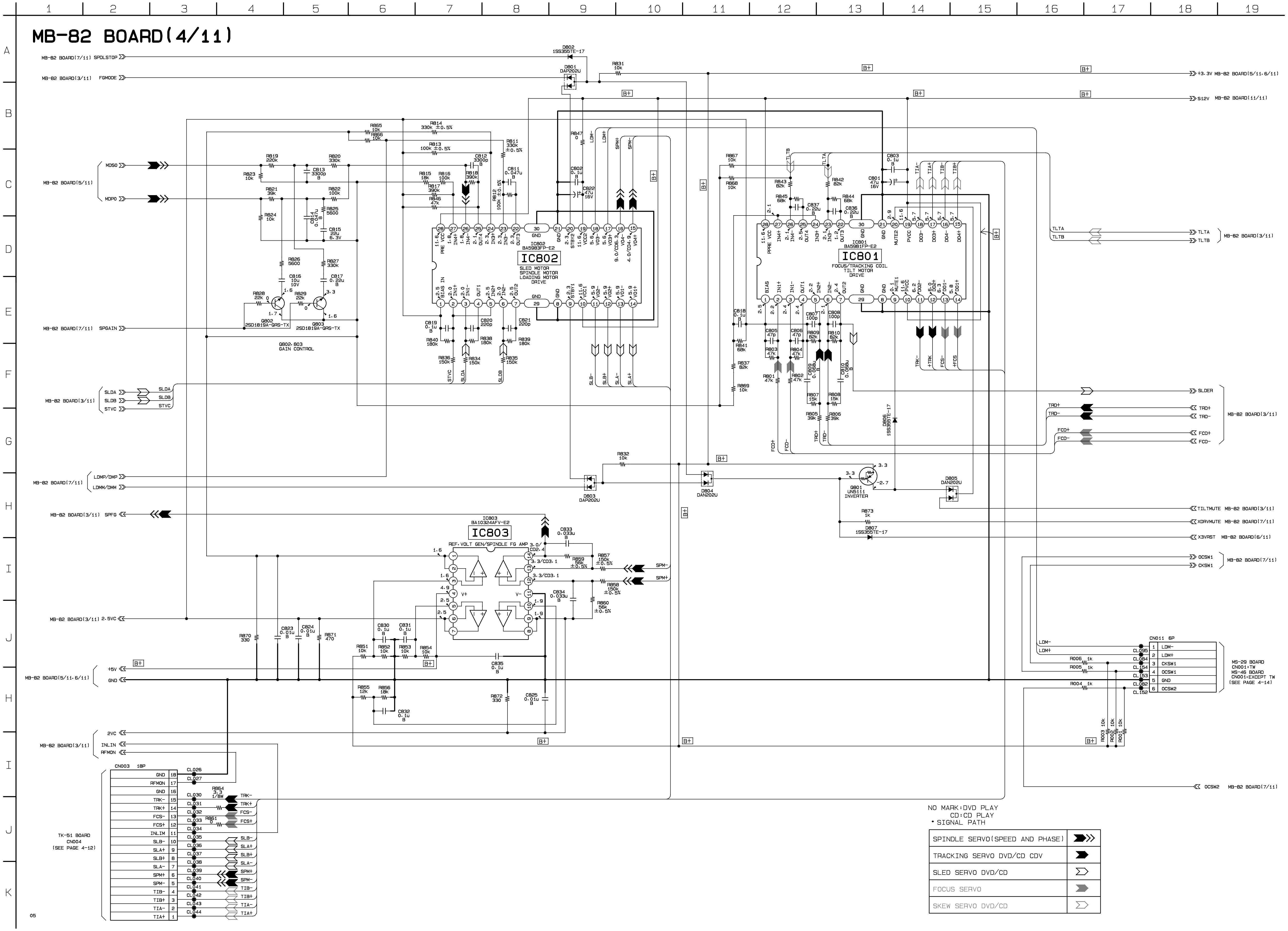


860 mVp-p



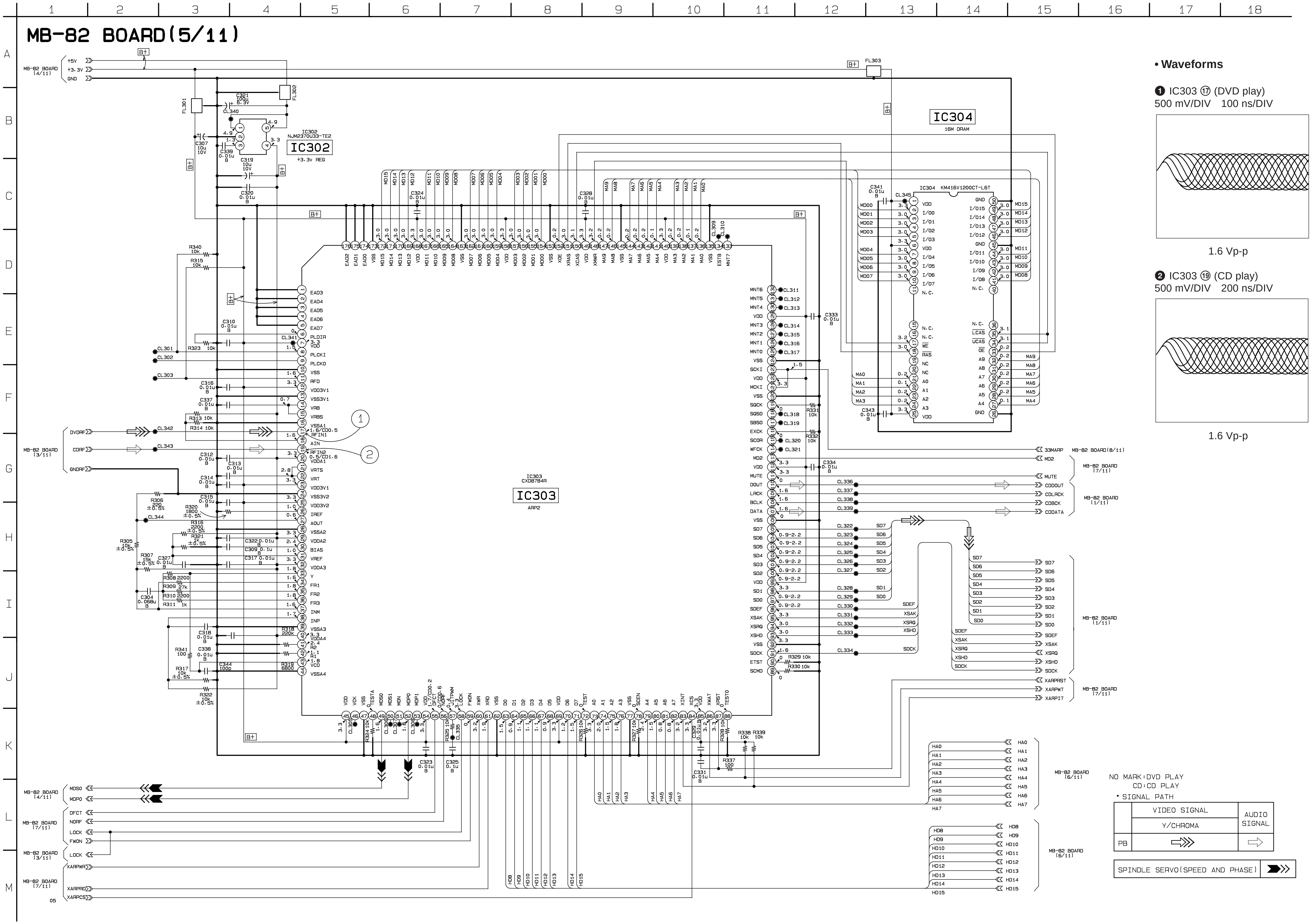
MB-82 (DRIVE) SCHEMATIC DIAGRAM • **See page 4-15 for printed wiring board.**

– Ref. No.: MB-82 board; 1,000 series –



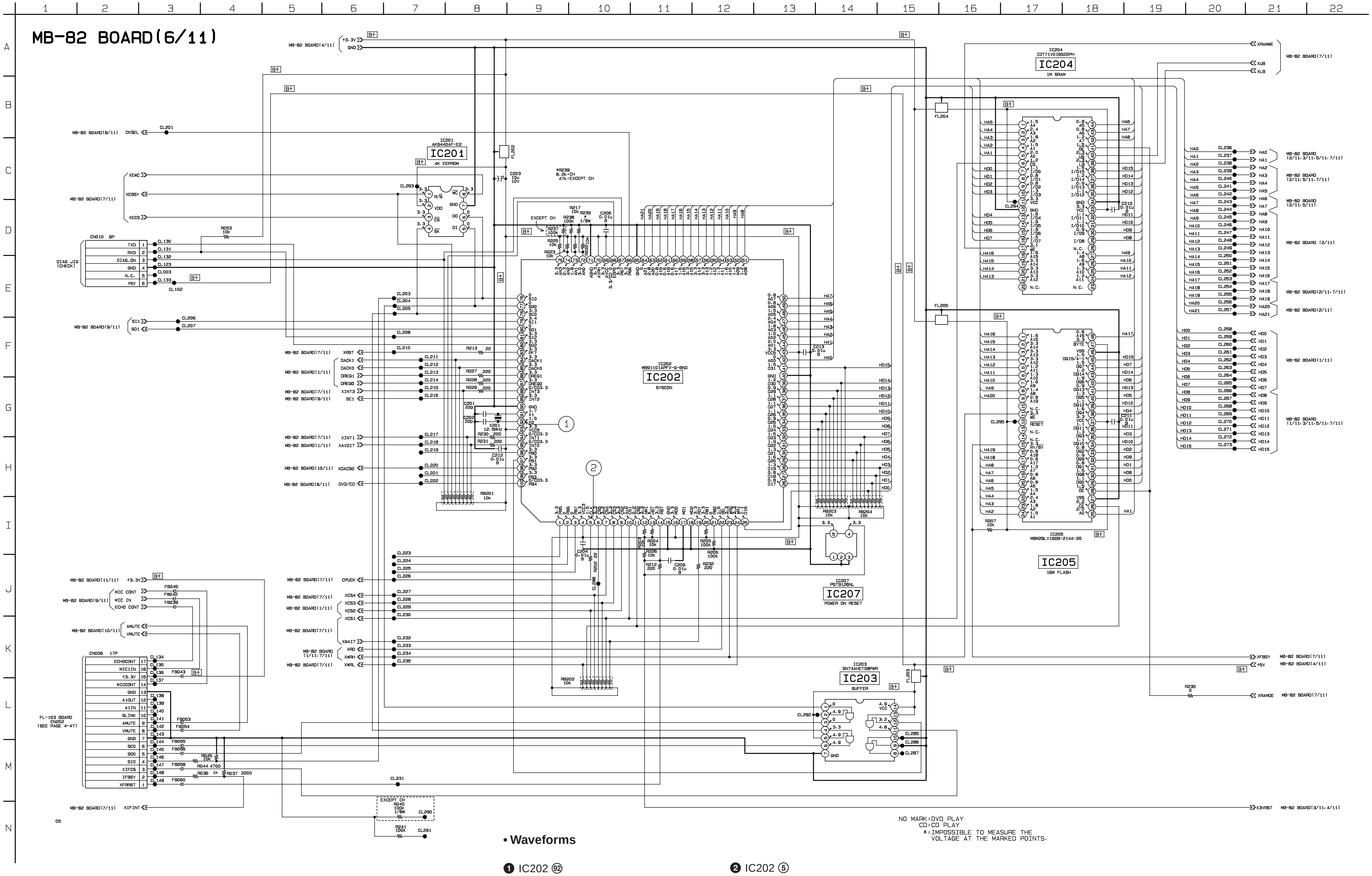
MB-82 (ARP) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –



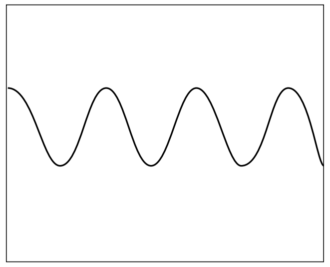
MB-82 (SYSTEM CONTROL) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-82 board; 1,000 series –



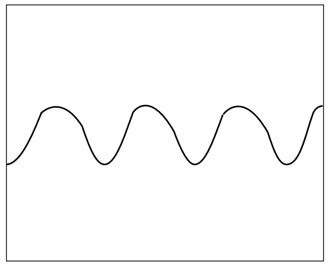
• Waveforms

❶ IC202 ㊾



2.4 Vp-p (12.5 MHz)

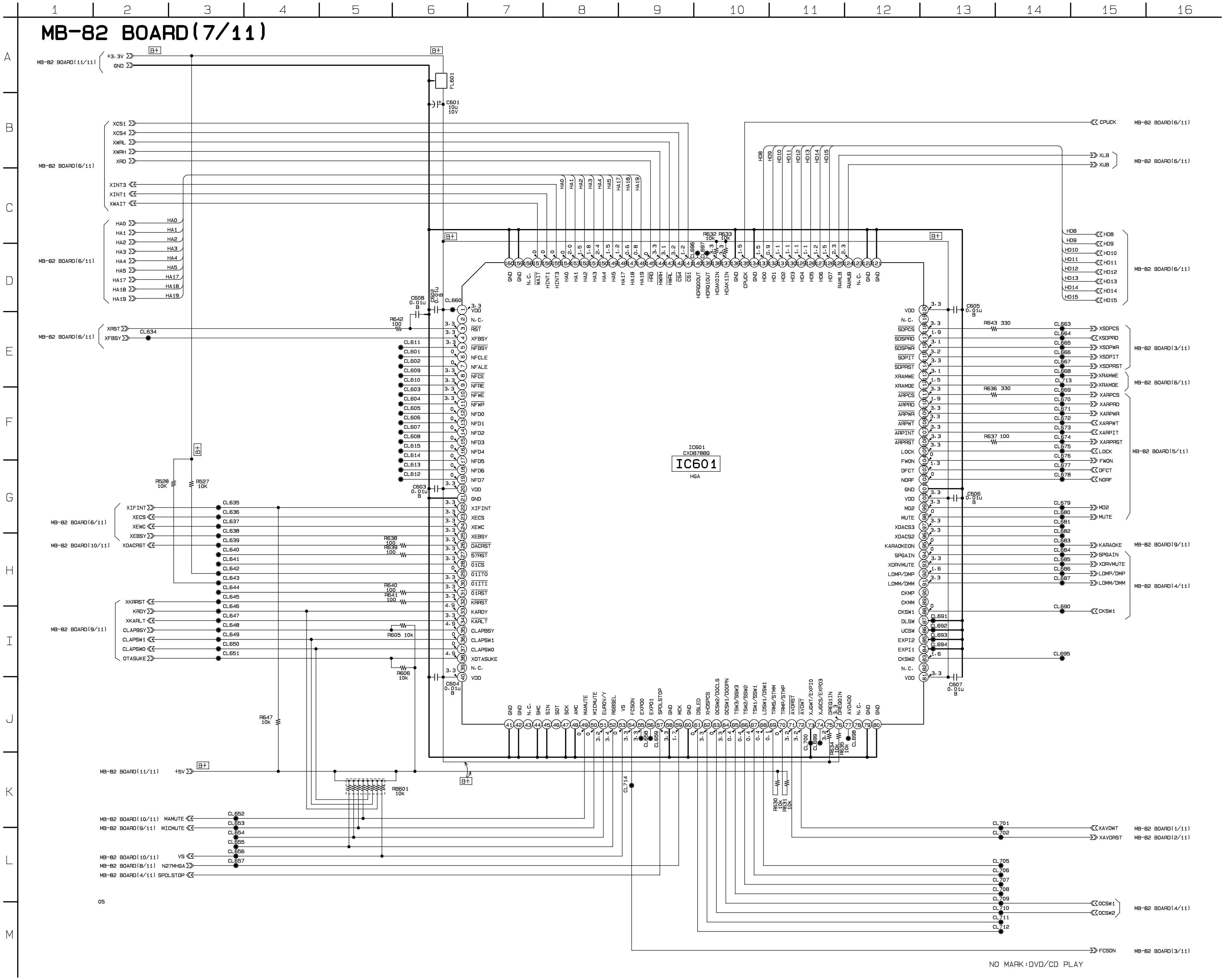
❷ IC202 ⑤



4 Vp-p (25.3 MHz)

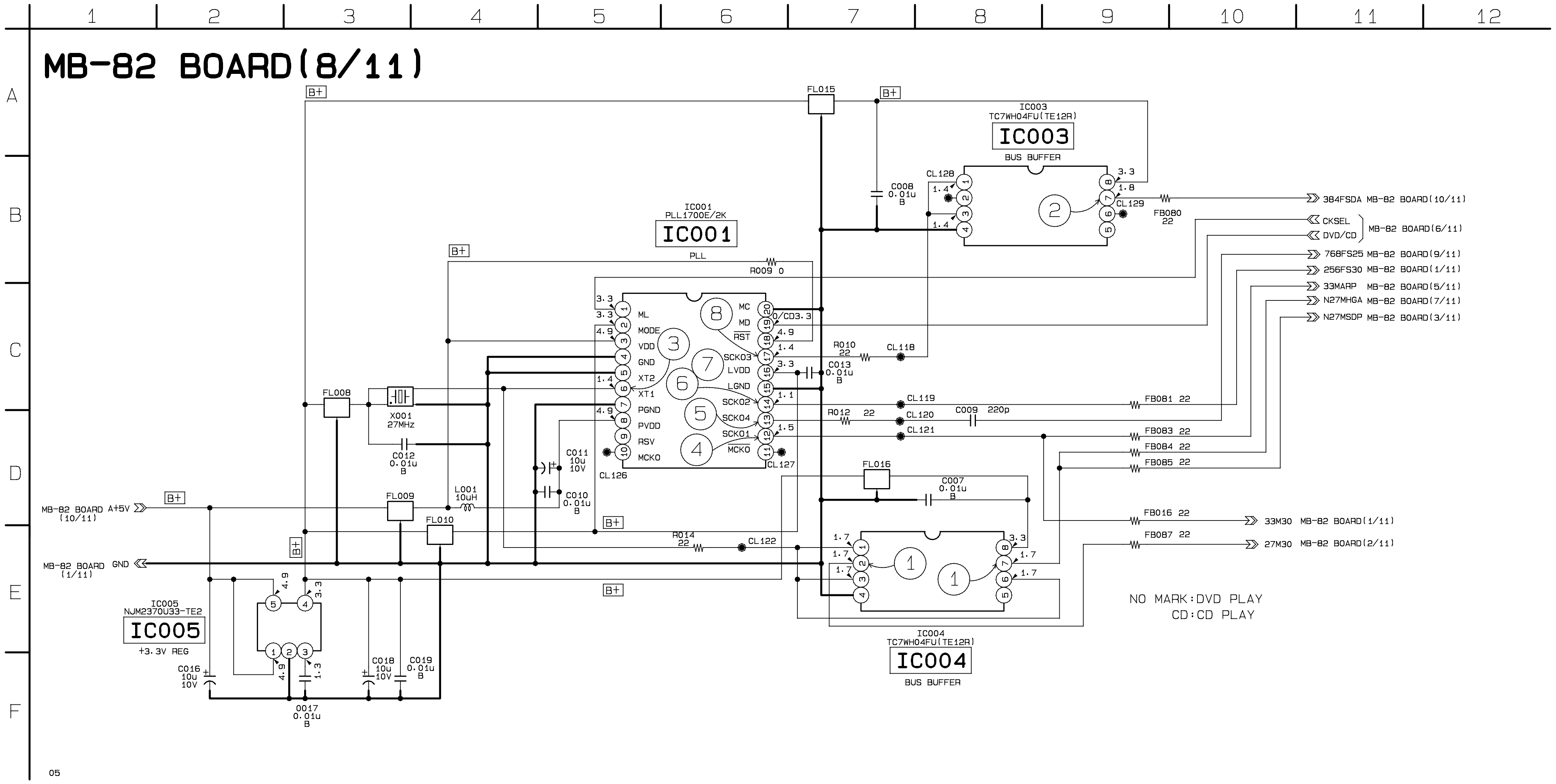
MB-82 (HGA) SCHEMATIC DIAGRAM • See page 4-15 for printed wiring board.

– Ref. No.: MB-82 board; 1,000 series –



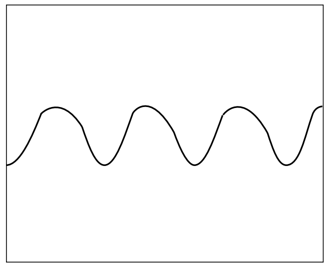
MB-82 (CLOCK GENERATOR) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**

– Ref. No.: MB-82 board; 1,000 series –



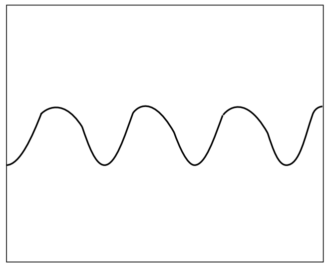
• Waveforms

❶ IC004 ②, ⑦



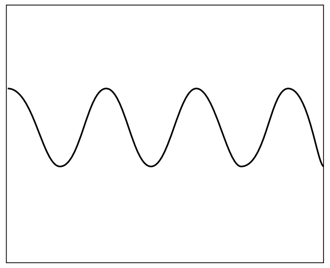
4.2 Vp-p (26.9 MHz)

❷ IC003 ⑦



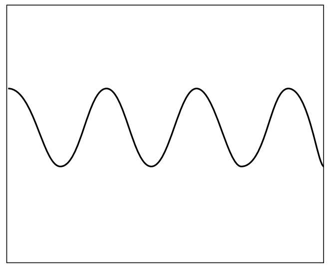
DVD : 6.2 Vp-p (37.0 MHz)
CD : 5 Vp-p (33.6 MHz)

❸ IC001 ⑥



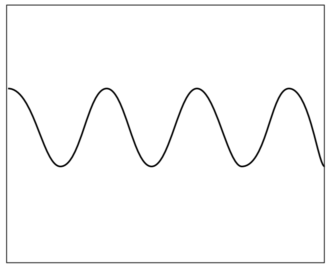
4.2 Vp-p (27.0 MHz)

❹ IC001 ⑫



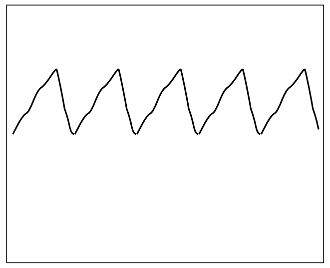
4.6 Vp-p (33.8 MHz)

❺ IC001 ⑬



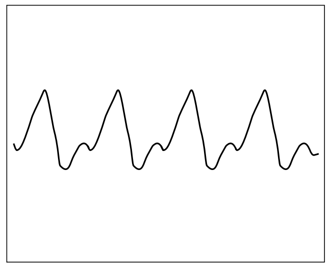
DVD : 5.6 Vp-p (36.8 MHz)
CD : 5.2 Vp-p (33.9 MHz)

❻ IC001 ⑭ (DVD play)



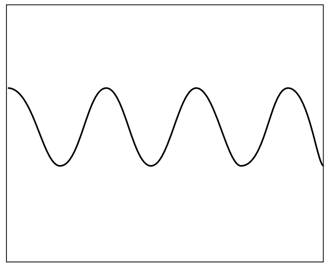
4.2 Vp-p (25.3 MHz)

❼ IC001 ⑭ (CD play)



4.7 Vp-p (22.5 MHz)

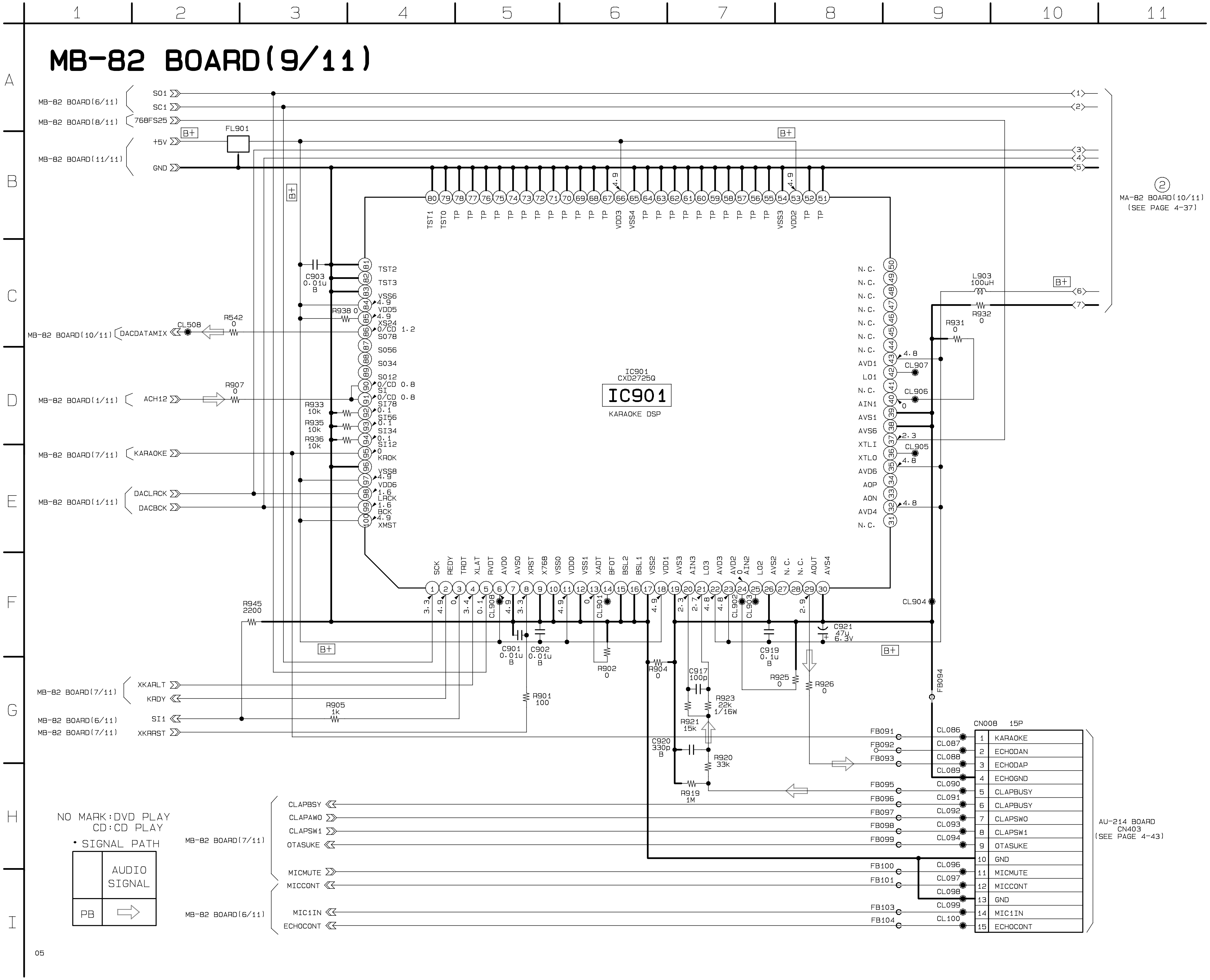
❽ IC001 ⑰



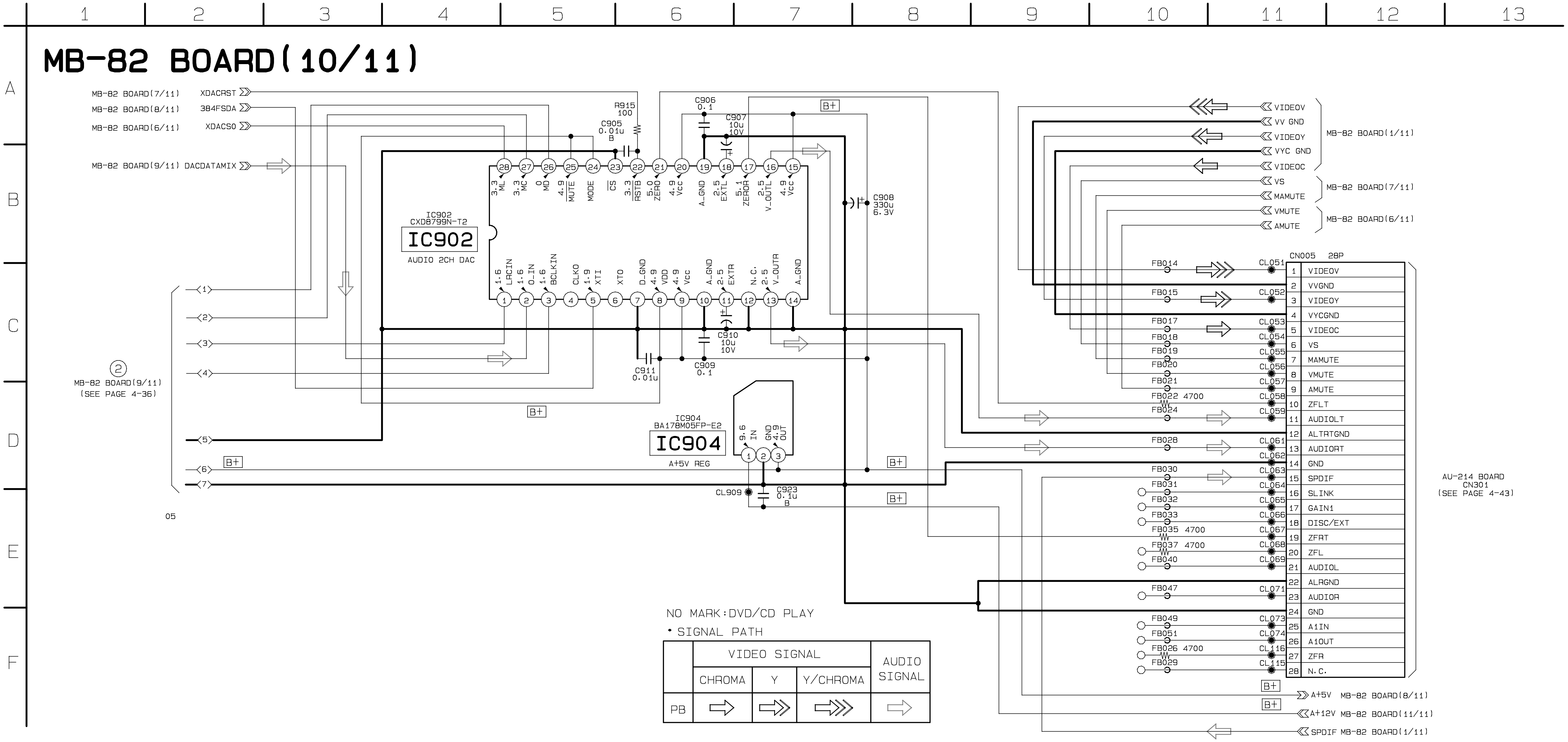
DVD : 5.8 Vp-p (36.5 MHz)
CD : 5.1 Vp-p (33.8 MHz)

MB-82 (KARAOKE DSP) SCHEMATIC DIAGRAM • **See page 4-15 for printed wiring board.**

– Ref. No.: MB-82 board; 1,000 series –

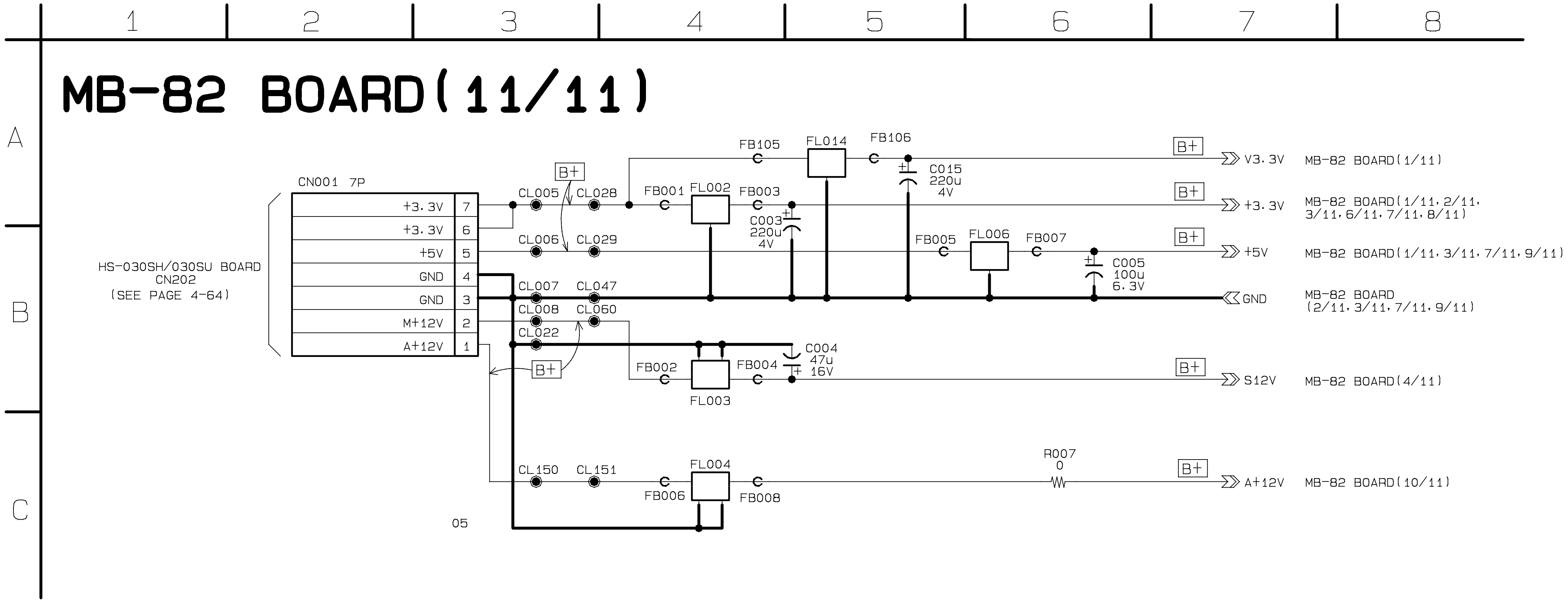


MB-82 (DAC) SCHEMATIC DIAGRAM • **See page 4-15 for printed wiring board.**
– Ref. No.: MB-82 board; 1,000 series –



DAC
MB-82 (10/11)

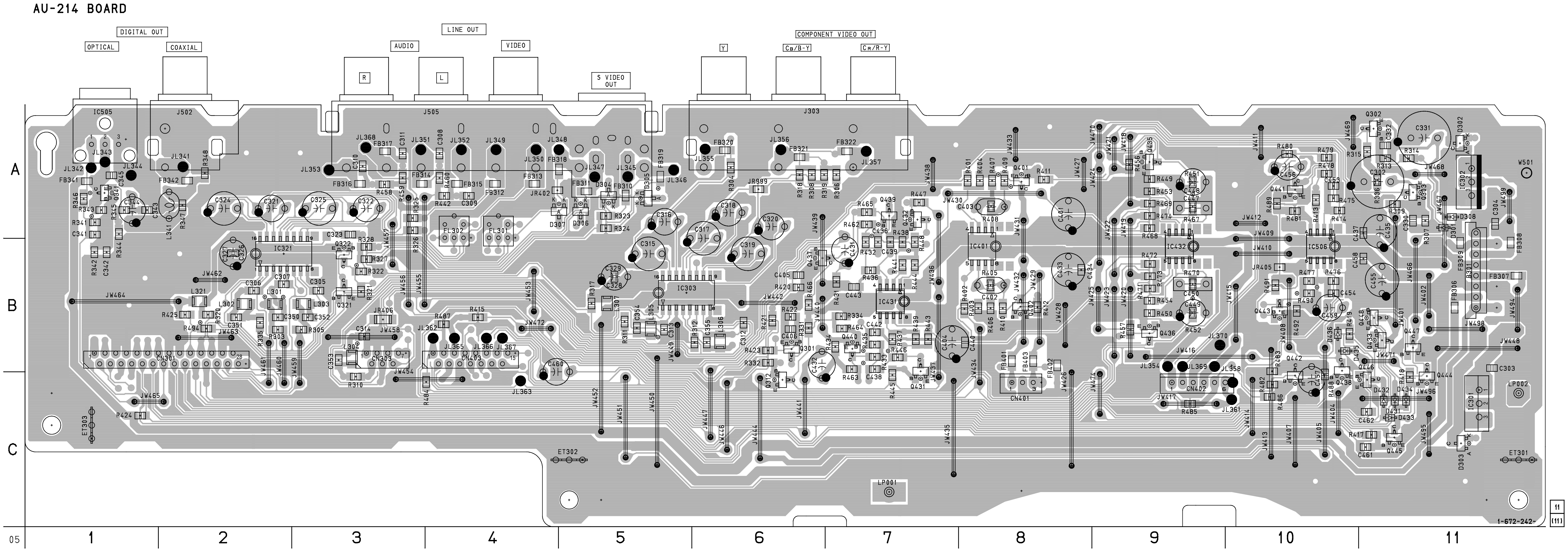
MB-82 (BIAS) SCHEMATIC DIAGRAM **• See page 4-15 for printed wiring board.**
– Ref. No.: MB-82 board; 1,000 series –



AU-214 (AUDIO/VIDEO BUFFER) PRINTED WIRING BOARD

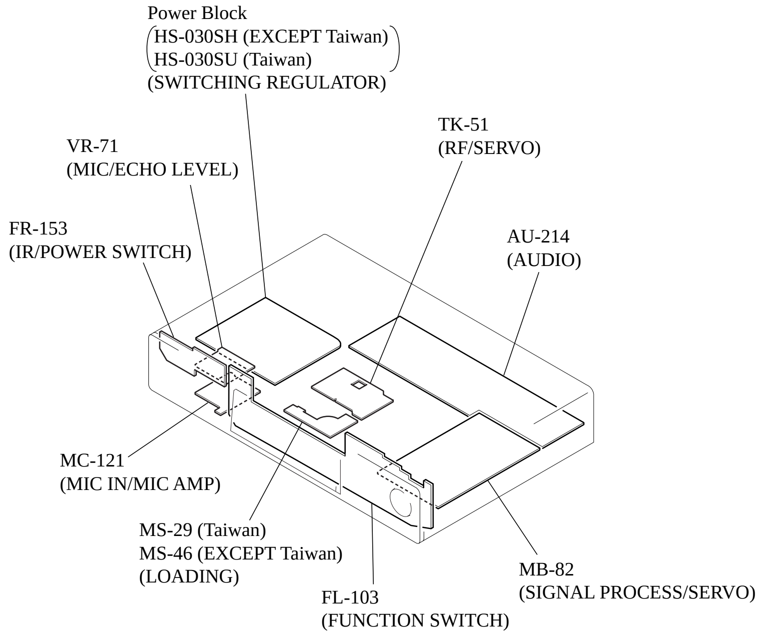
– Ref. No.: AU-214 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

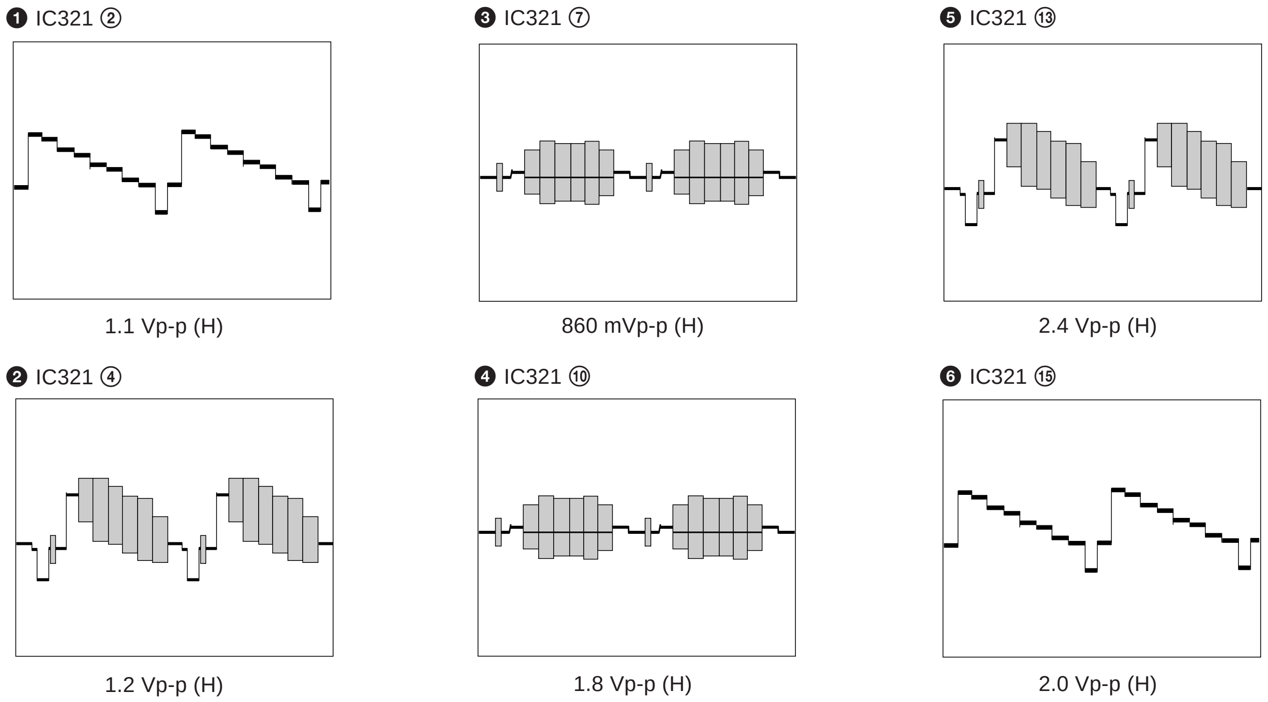


AU-214 BOARD

CN301	B-2	Q301	B-6
CN303	B-3	Q302	A-11
CN402	C-9	Q303	A-11
CN403	B-4	Q321	B-3
		Q322	B-3
D301	A-11	Q341	A-1
D302	A-11	Q433	B-11
D303	C-11	Q435	A-9
D304	A-5	Q436	B-9
D305	A-5	Q437	B-6
D306	A-5	Q438	C-10
D307	A-4	Q439	A-7
D308	A-11	Q440	B-7
D431	C-11	Q441	A-10
D434	C-11	Q442	C-10
D435	B-10	Q443	B-10
D436	B-10	Q444	C-11
		Q445	C-11
IC301	C-11	Q446	C-11
IC302	A-11	Q447	B-11
IC303	B-5	Q448	B-11
IC321	B-2		
IC431	B-7		
IC432	B-9		
IC505	A-1		
IC506	B-10		

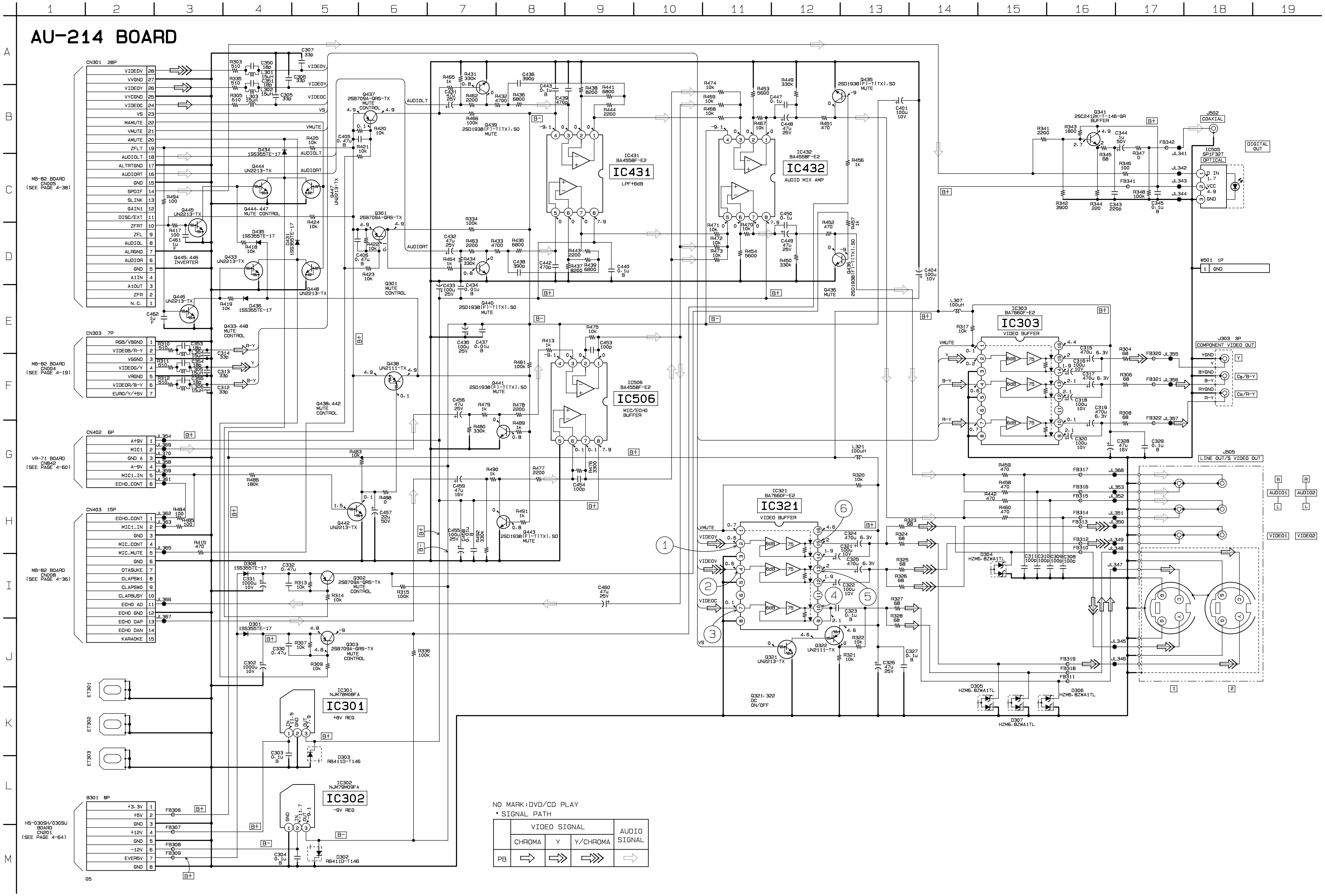


• **Waveforms**



AU-214 (AUDIO/VIDEO BUFFER) SCHEMATIC DIAGRAM • See page 4-41 for printed wiring board and page 4-42 for waveforms.

– Ref. No.: AU-214 board; 2,000 series –



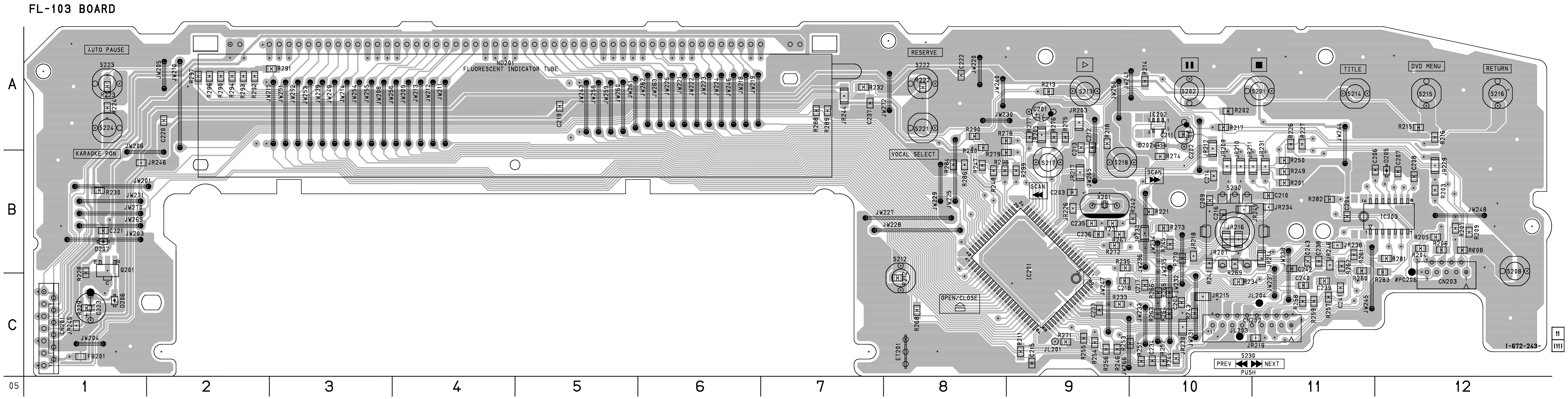
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	⇨	⇨	⇨	⇨

AUDIO/VIDEO BUFFER
AU-214

FL-103 (FUNCTION SWITCH/IF CON) PRINTED WIRING BOARD

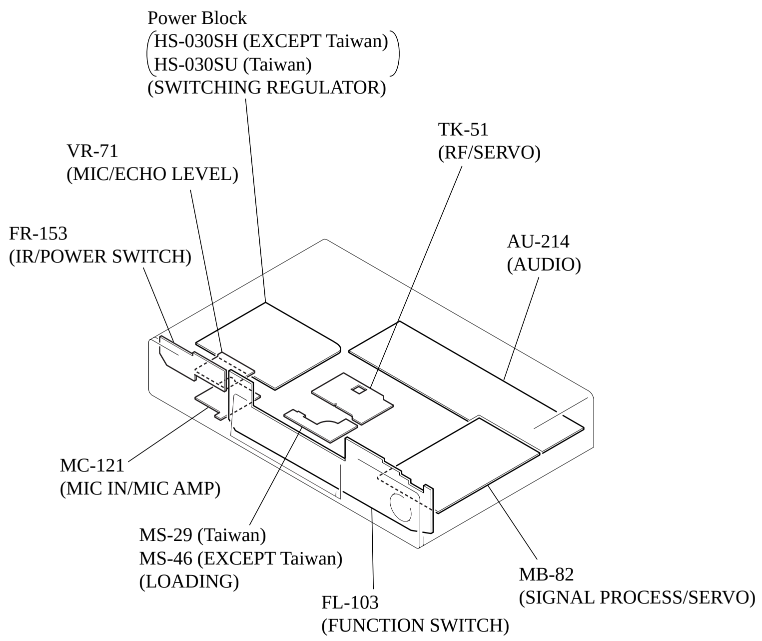
– Ref. No.: FL-103 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

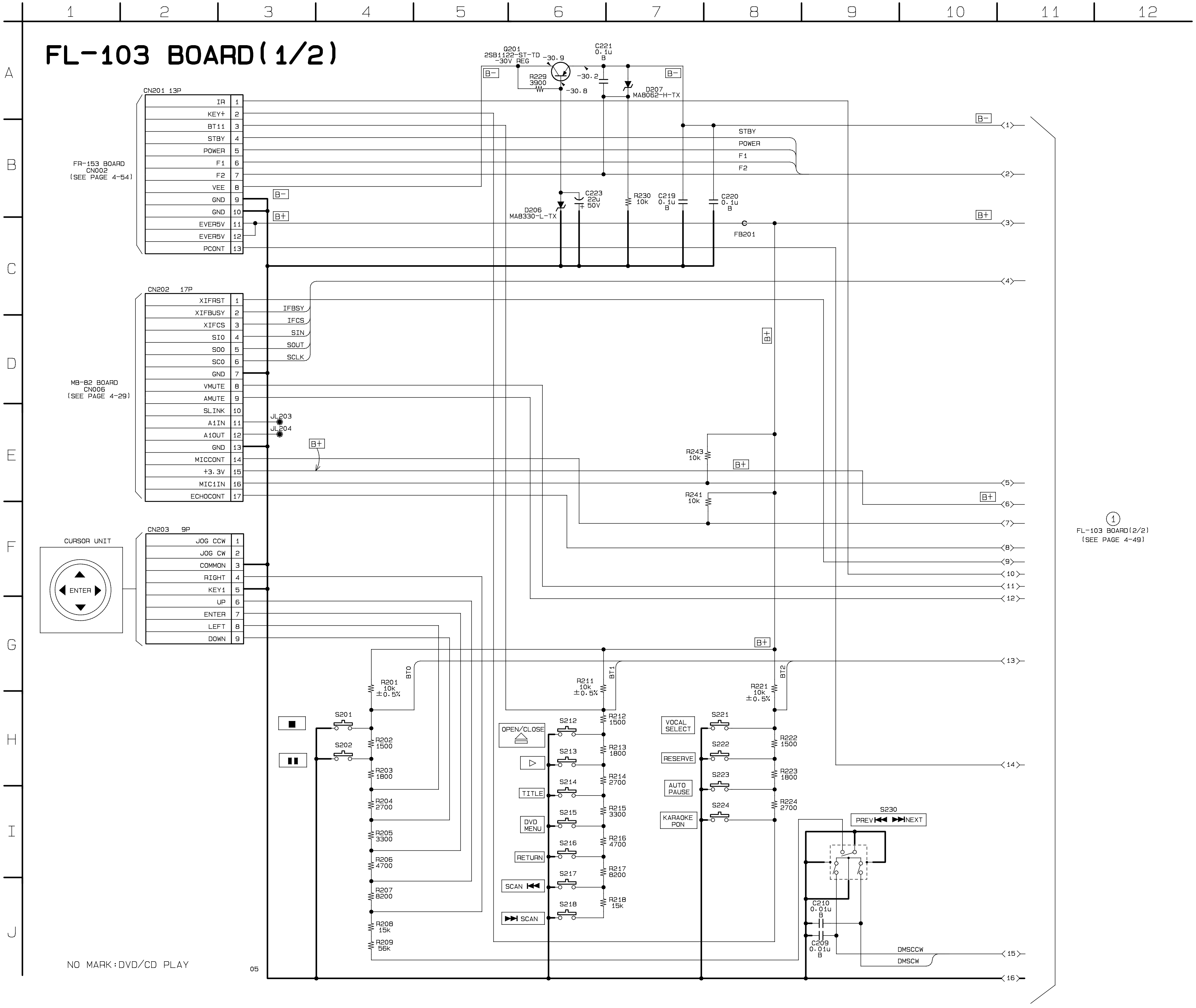


FL-103 BOARD

CN201	C-1
CN202	C-10
CN203	C-12
D202	A-10
D206	C-1
D207	B-1
IC201	B-9
IC202	A-10
Q201	B-1



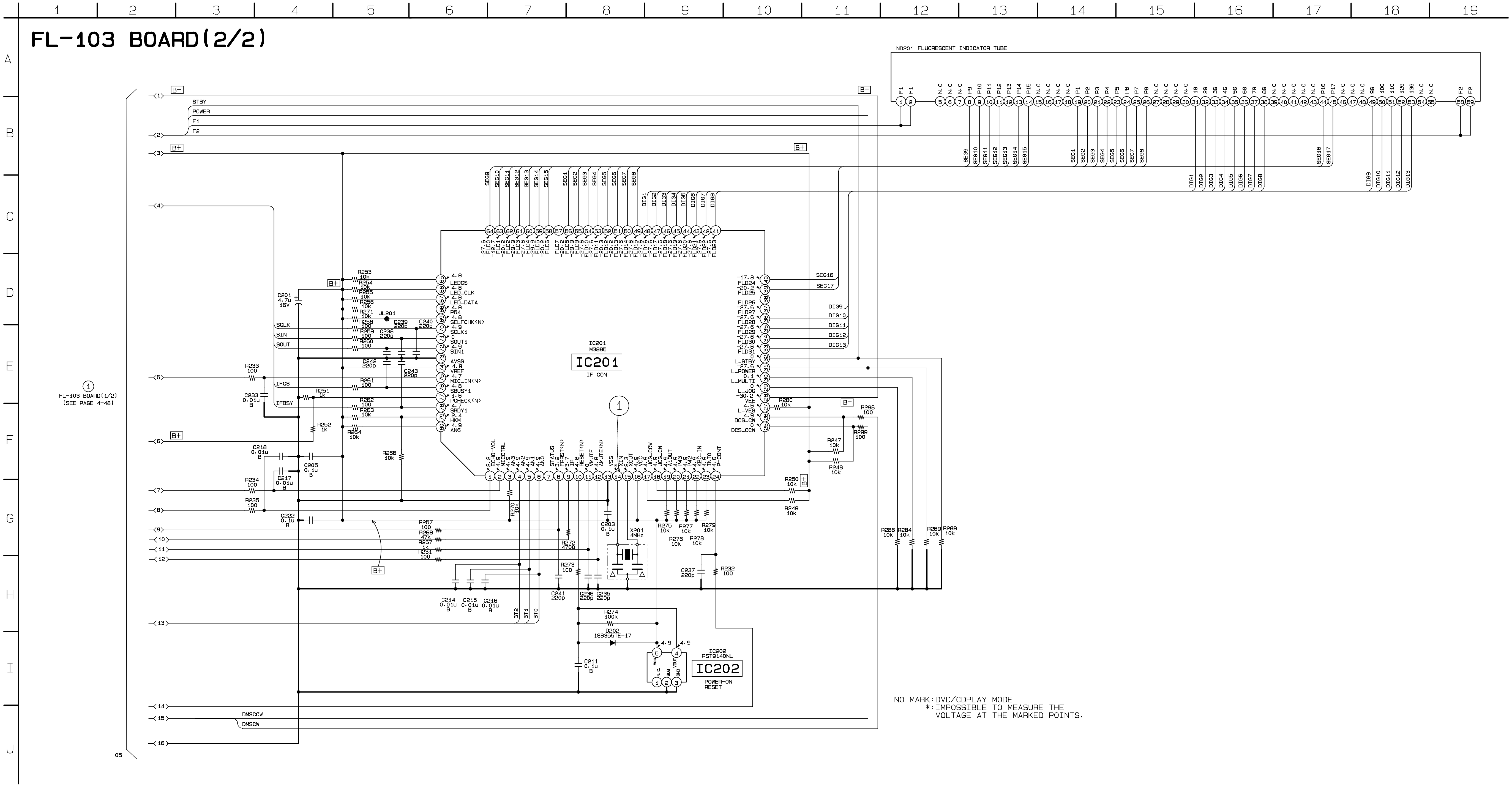
FL-103 (FUNCTION SWITCH) SCHEMATIC DIAGRAM • **See page 4-45 for printed wiring board.**
– Ref. No.: FL-103 board; 2,000 series –



FUNCTION SWITCH
FL-103 (1/2)

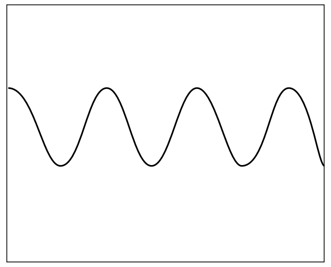
FL-103 (IF CON) SCHEMATIC DIAGRAM • See page 4-45 for printed wiring board.

– Ref. No.: FL-103 board; 2,000 series –



• Waveform

❶ IC201 ⑭

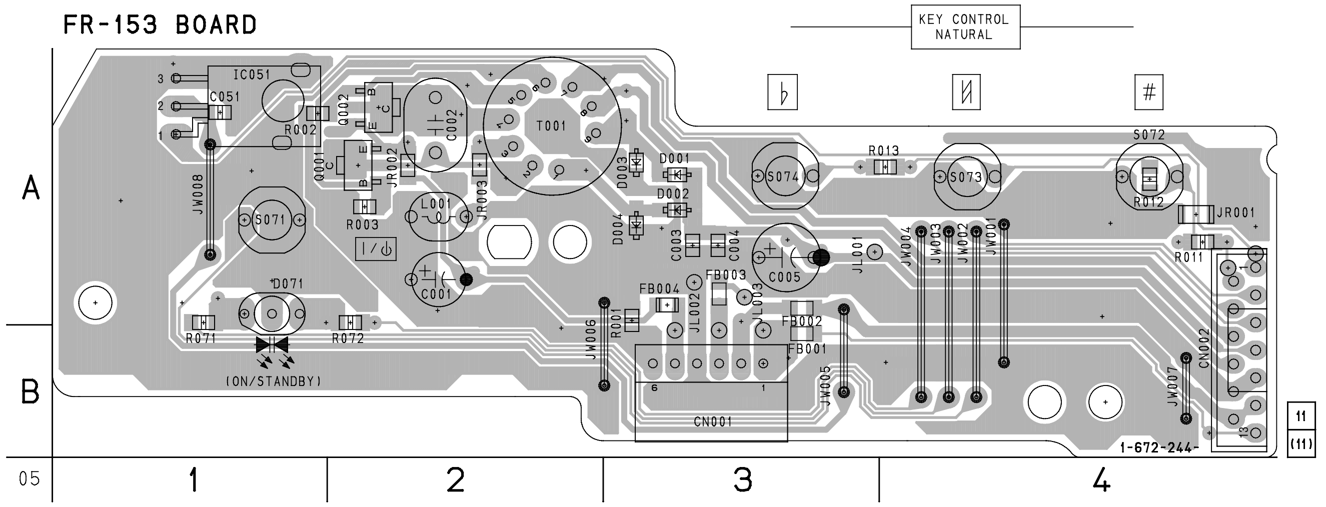


3.9 Vp-p (4 MHz)

FR-153 (IR/POWER SWITCH) PRINTED WIRING BOARD

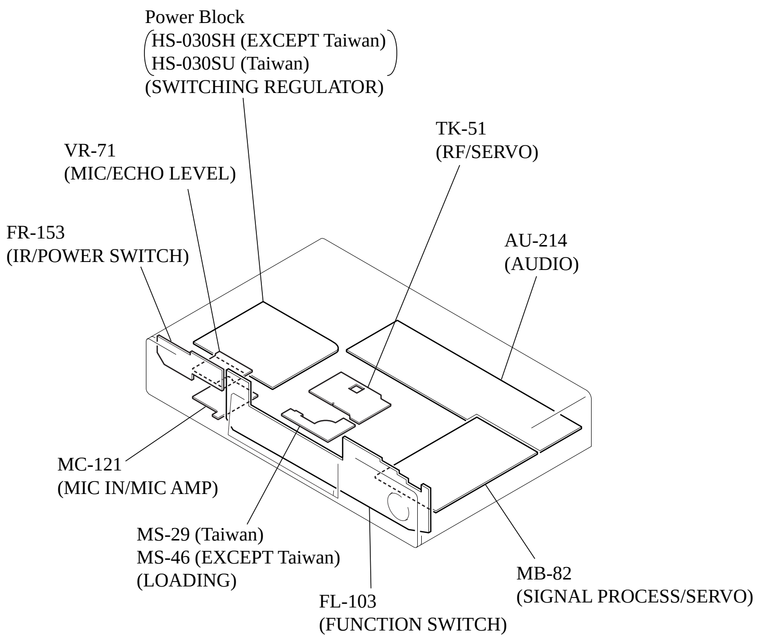
– Ref. No.: FR-153 board; 4,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

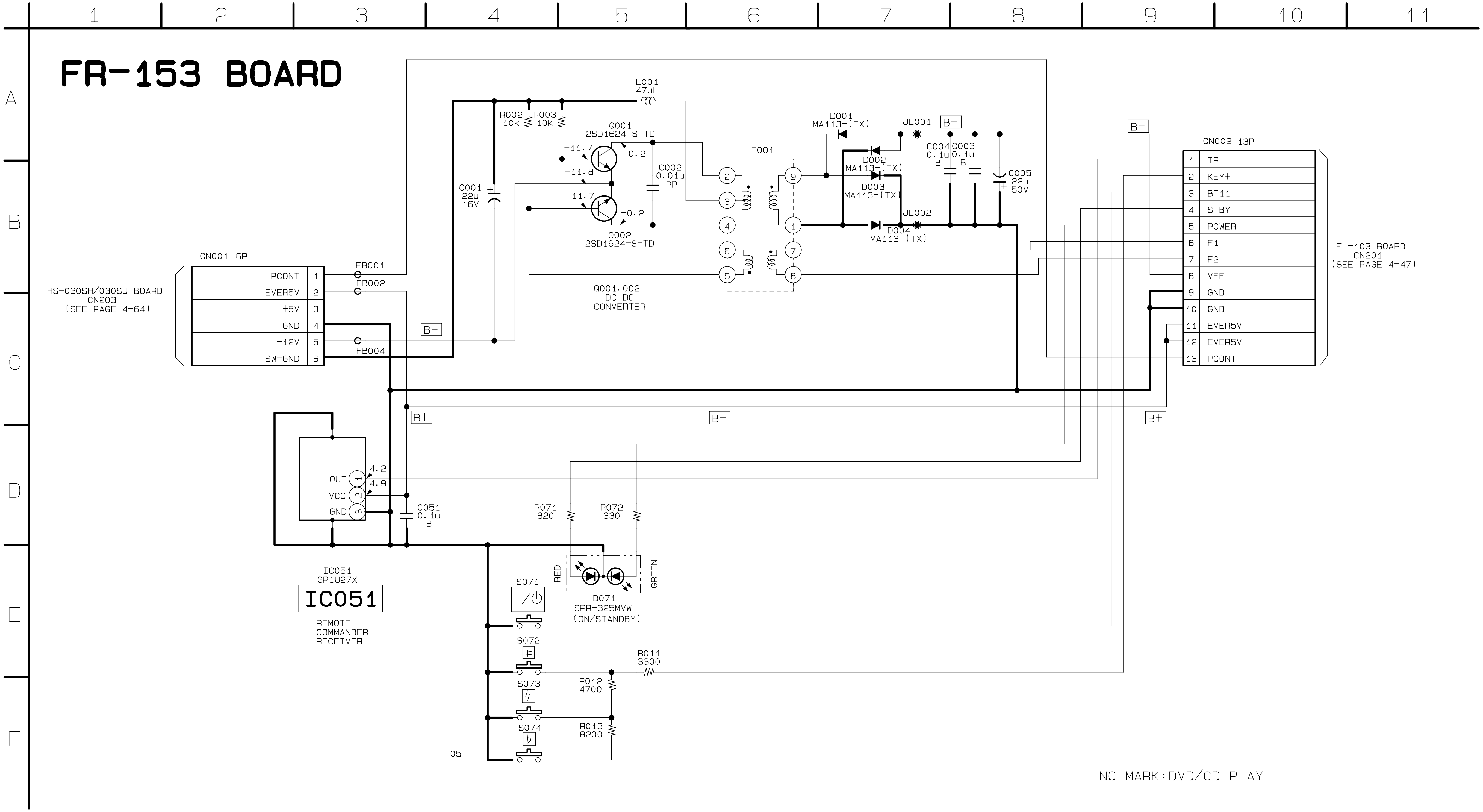


FR-153 BOARD

CN001	B-3
CN002	B-4
D001	A-3
D002	A-3
D003	A-3
D004	A-3
D071	A-1
IC051	A-1
Q001	A-2
Q002	A-2

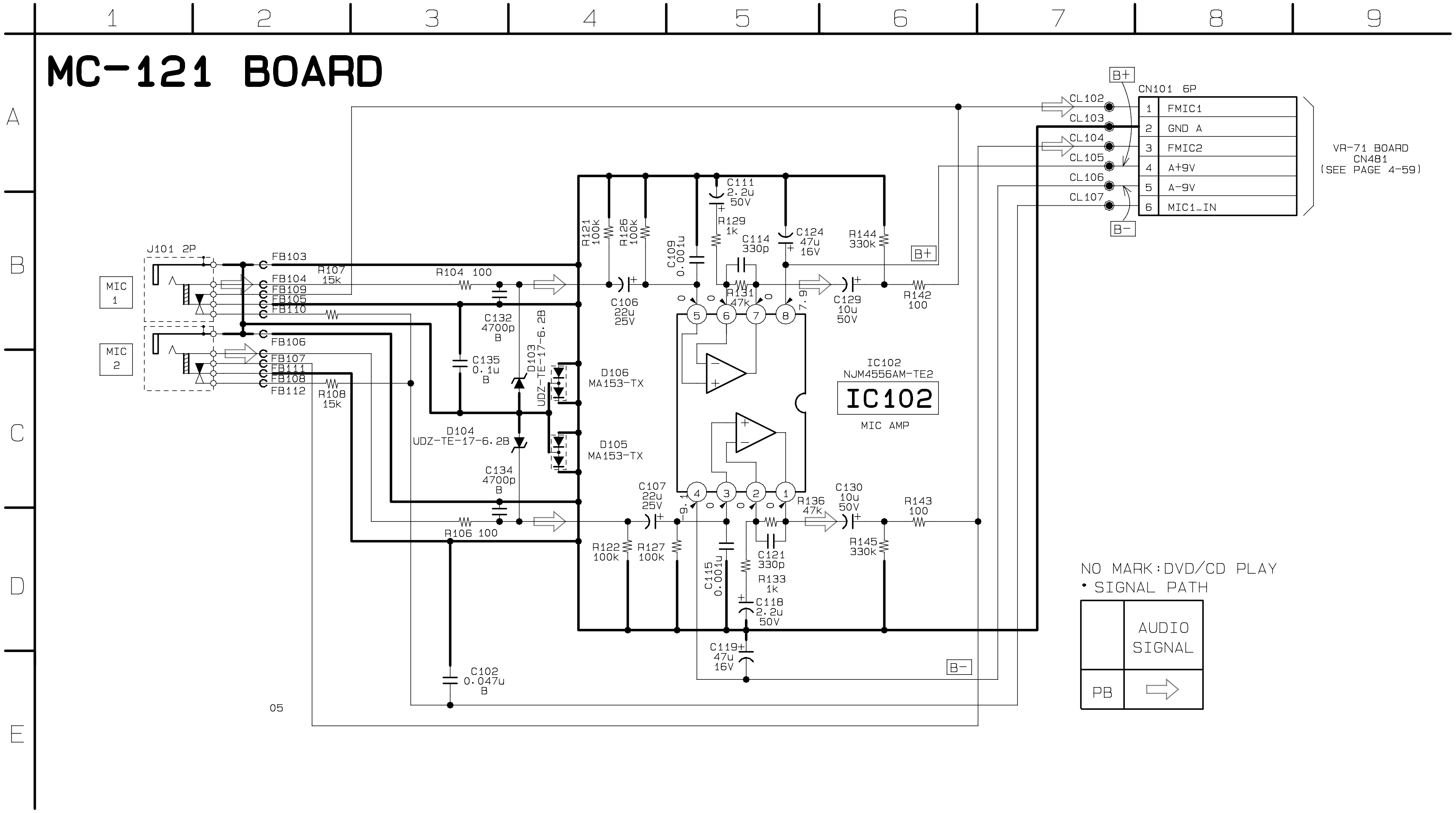


FR-153 (IR/POWER SWITCH) SCHEMATIC DIAGRAM
– Ref. No.: FR-153 board; 4,000 series –



MC-121 (MIC IN/MIC AMP) SCHEMATIC DIAGRAM

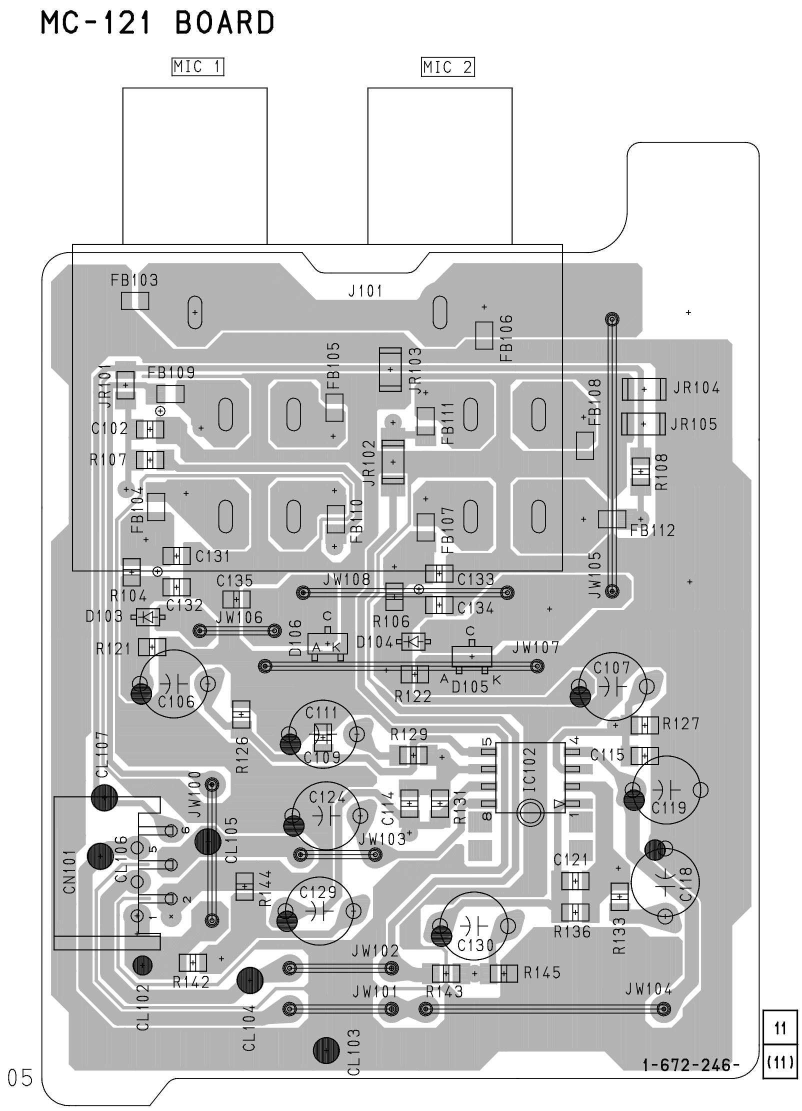
– Ref. No.: MC-121 board; 2,000 series –

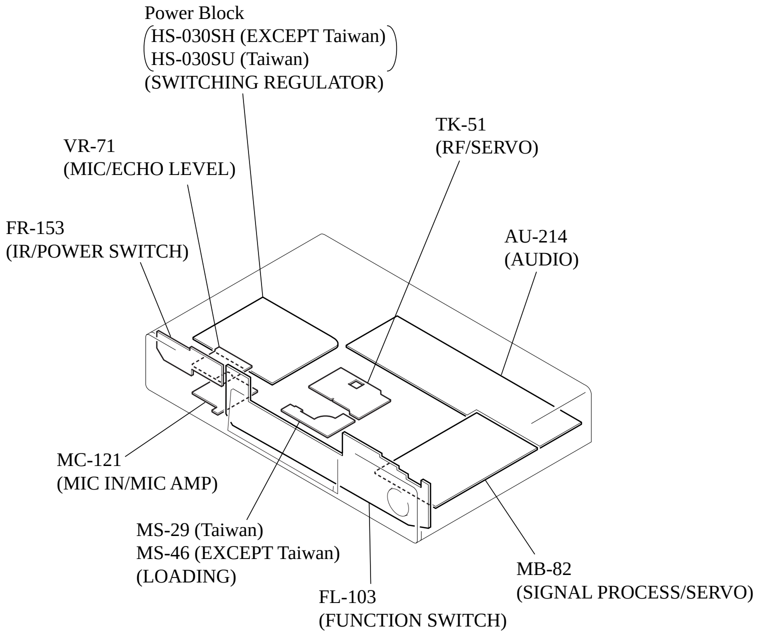


MC-121 (MIC IN/MIC AMP) PRINTED WIRING BOARD

– Ref. No.: MC-121 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

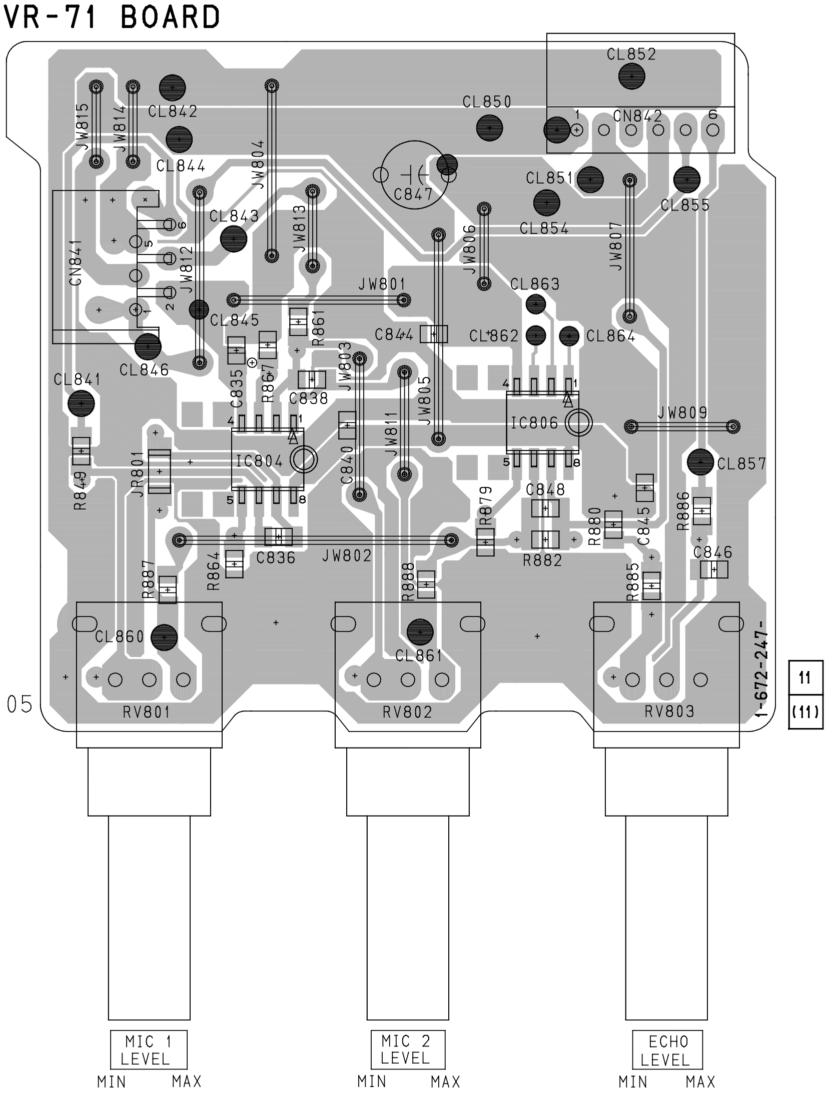


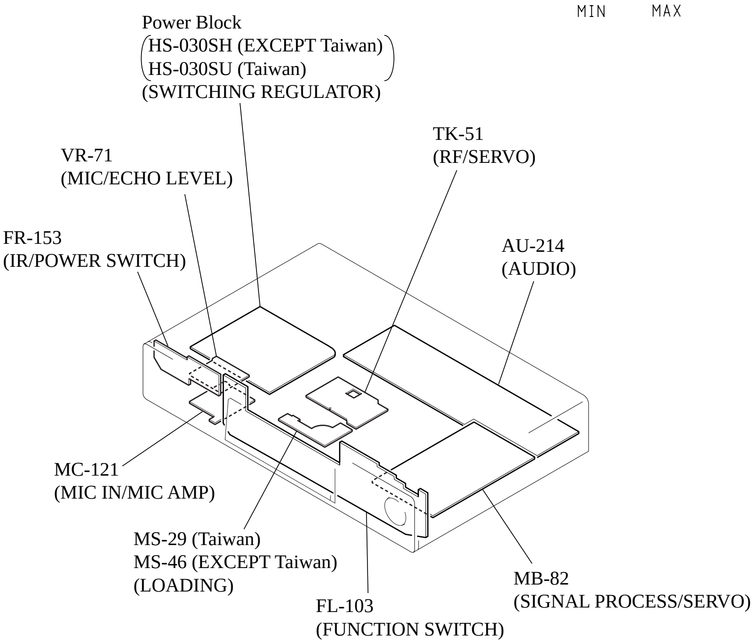


VR-71 (MIC/ECHO LEVEL) PRINTED WIRING BOARD

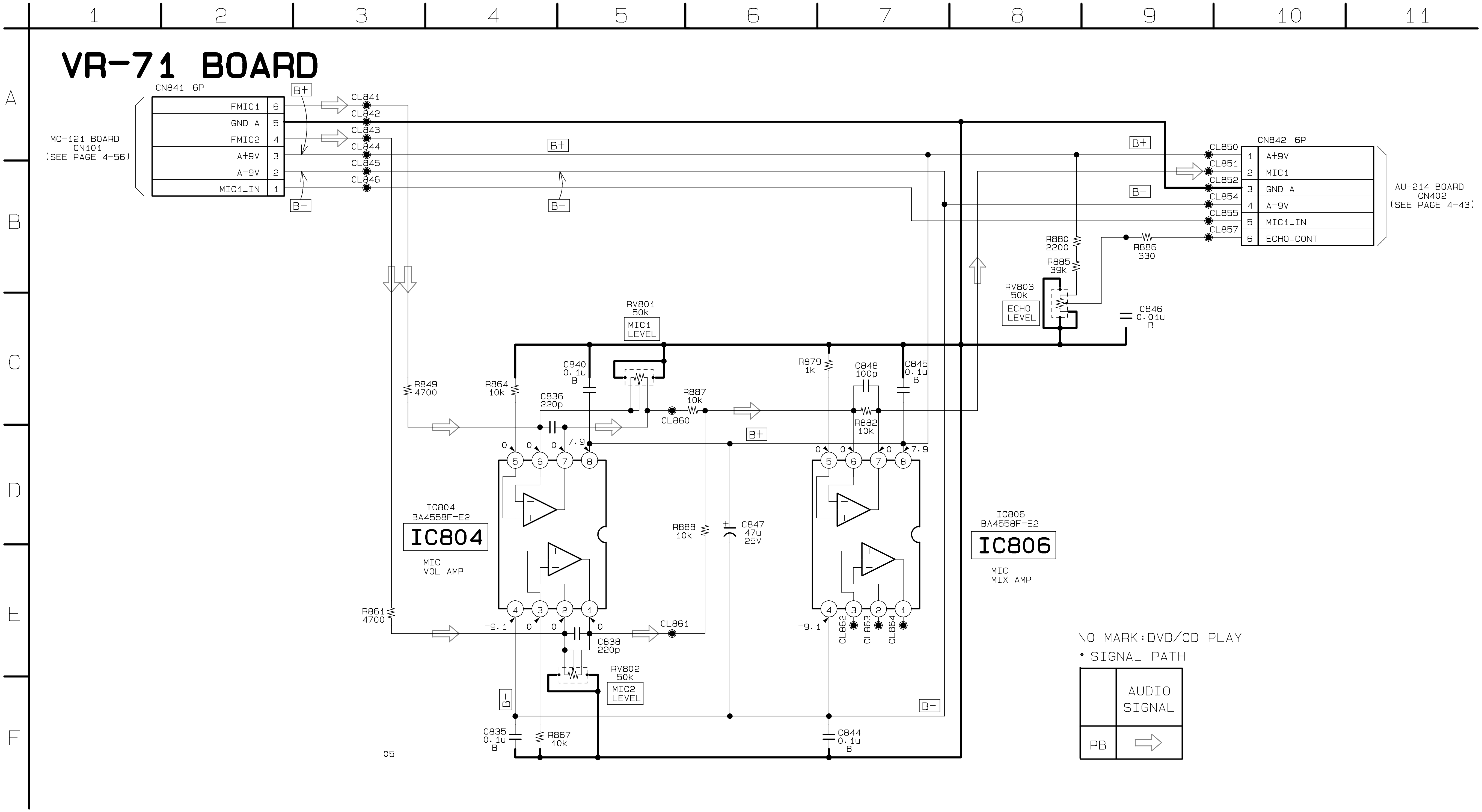
– Ref. No.: VR-71 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.





VR-71 (MIC/ECHO LEVEL) SCHEMATIC DIAGRAM
– Ref. No.: VR-71 board; 2,000 series –



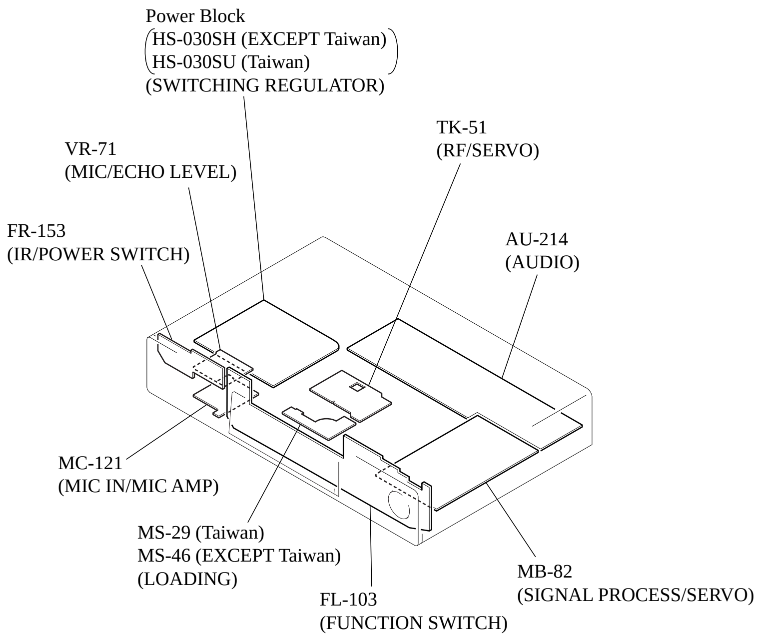
HS-030SH/030SU (SWITCHING REGULATOR) PRINTED WIRING BOARD

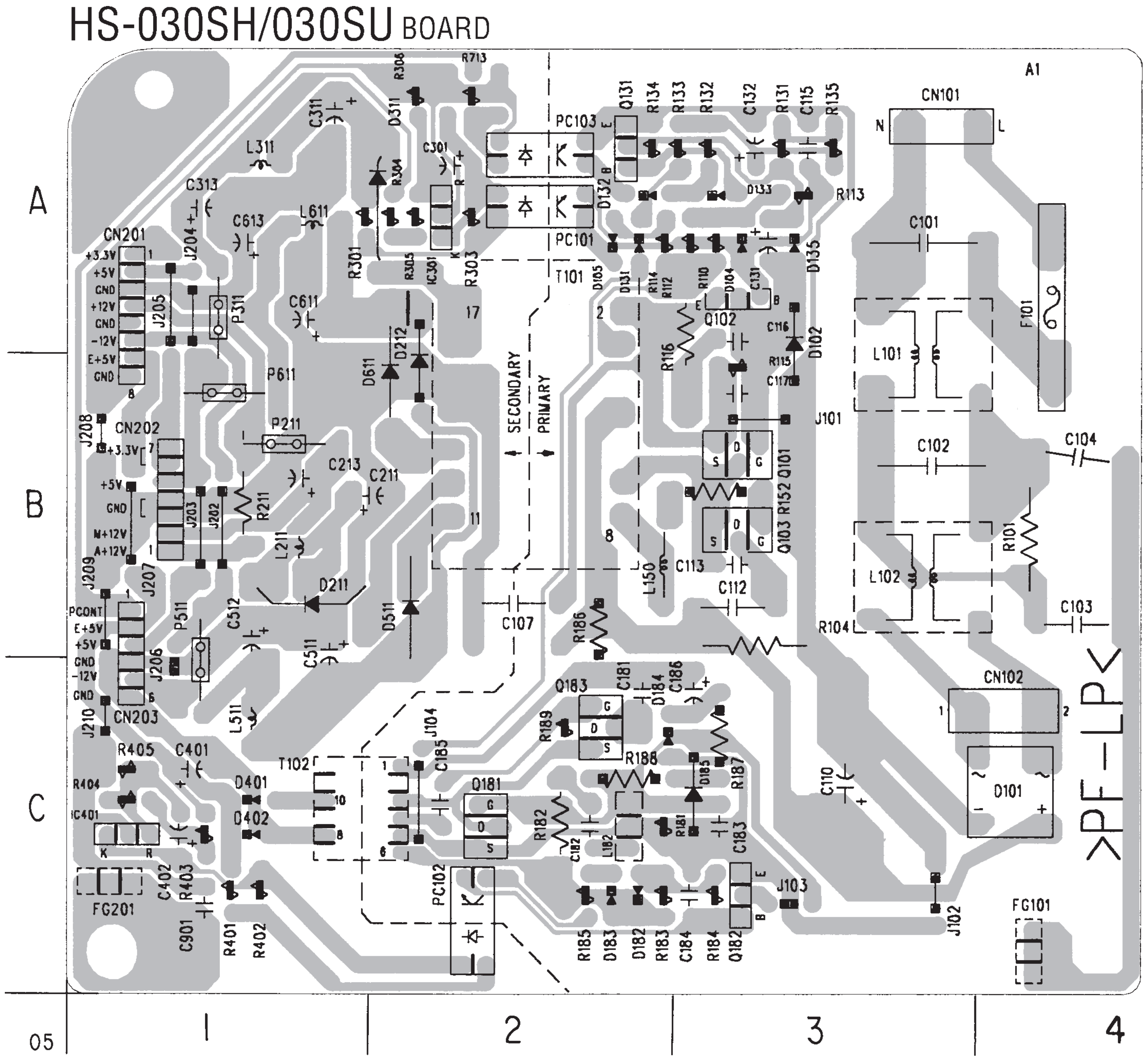
– Ref. No.: HS-030SH/030SU board; 6,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

HS-030SH/030SU BOARD

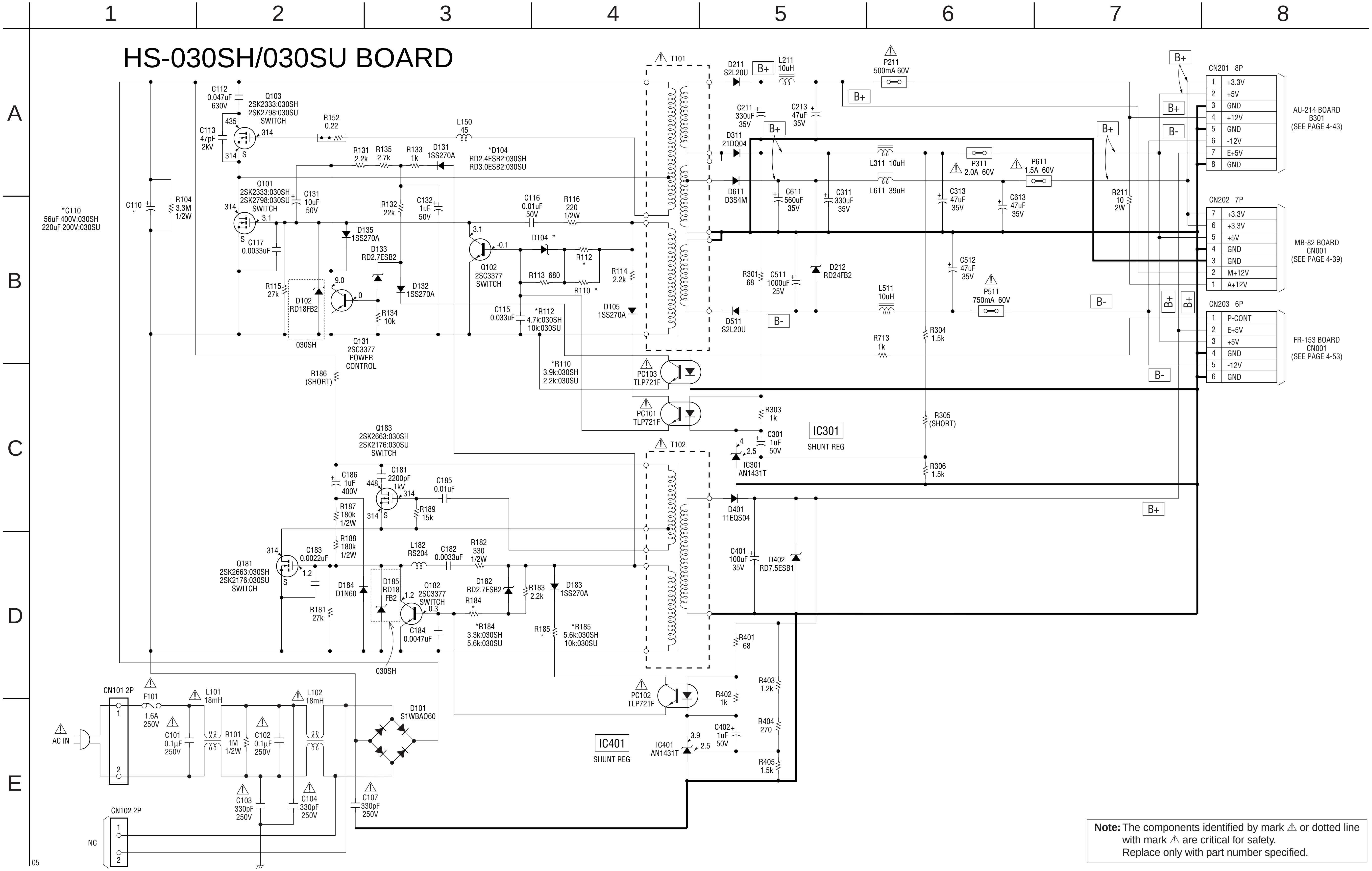
CN101	A-3
CN102	C-4
CN201	A-1
CN202	B-1
CN203	B-1
D101	C-4
D102	A-3
D104	A-3
D105	A-2
D131	A-2
D132	A-2
D133	A-3
D135	A-3
D182	C-2
D183	C-2
D184	C-2
D185	C-3
D211	B-1
D212	B-2
D311	A-2
D401	C-1
D402	C-1
D511	B-2
D611	B-2
IC301	A-2
IC401	C-1
Q101	B-3
Q102	A-3
Q103	B-3
Q131	A-2
Q181	C-2
Q182	C-3
Q183	C-2





HS-030SH:1-468-359-11
HS-030SU:1-468-359-31

HS-030SH/030SU (SWITCHING REGULATOR) SCHEMATIC DIAGRAM
– Ref. No.: HS-030SH/030SU board; 6,000 series –



Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SWITCHING REGULATOR
HS-030SH/030SU

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-82 BOARD IC202)

Pin No.	Pin name	I/O	Function
1	PB5	O	Analog filter gain control
2	PB6	O	VES gain control “H”: VES
3	PB7	O	Rear CH boost control “H”: rear boost
4	VCC3	-	Power supply
5	CLK	O	CPU clock out (25 MHz)
6	$\overline{\text{CS5}}$	O	Not used
7	$\overline{\text{CS4}}$	O	Chip select signal for ARP, SERVO DSP and HGA
8	$\overline{\text{CS3}}$	O	Chip select signal for SDRAM and AV DEC
9	$\overline{\text{CS2}}$	O	Chip select signal for REG and AV DEC
10	$\overline{\text{CS1}}$	O	Chip select signal for external SRAM
11	$\overline{\text{CS0}}$	O	Chip select signal for external FLASH ROM
12	$\overline{\text{NMI}}$	I	Not used (fixed at “H”)
13	$\overline{\text{HST}}$	I	Not used (fixed at “H”)
14	$\overline{\text{RST}}$	I	Reset signal input from IF CON
15	GND	-	Ground
16	MD0	I	Input of mode select 0 (fixed at “1”)
17	MD1	I	Input of mode select 1 (fixed at “0”)
18	MD2	I	Input of mode select 2 (fixed at “0”)
19	RDY	I	Wait signal input
20	P81	I	Test terminal (fixed at “H”)
21	P82	I	Test terminal (fixed at “L”)
22	$\overline{\text{RD}}$	O	Read enable signal output
23	$\overline{\text{WR0}}$	O	High byte write enable signal output (16 bit and 8 bit)
24	$\overline{\text{WR1}}$	O	Low byte write enable signal output (16 bit only)
25-32	D16-D23	I/O	Data bus D0-D7 (16 bit)
33-39	D24-D30	I/O	Data bus D8-D14 (16 bit), D0-D6 (8 bit)
40	GND	-	Ground
41	D31	I/O	Data bus D15 (16 bit), D7 (8 bit)
42	A00	O	Address bus A0
43	VCC5	-	Power supply
44-64	A01-A21	O	Address bus A1-A21
65	GND	-	Ground
66	P66	O	PLL IC control output “H”: DOUBLE
67	P67	I	DIAG mode signal input “L”: DIAG

Pin No.	Pin name	I/O	Function
68	EOP0	I	Not used
69	AVCC	-	Power supply
70	AVRH	-	Reference power supply (+3.3V)
71	AGND	-	Ground
72	AN0	I	Set of mode 0
73	AN1	I	Set of mode 1
74	AN2	I	Set of mode 2
75	AN3	I	Set of mode 3 (fixed at “H”)
76	SI0	I	Serial data input from IF CON and EEPROM
77	SO0	O	Serial data output to IF CON and EEPROM
78	SC0	O	Serial clock output to IF CON and EEPROM
79	SI1	I	Serial bus 1 (for data input)
80	SO1	O	Serial bus 1 (for data output)
81	SI2	I	Serial bus 2 (for data input)
82	SO2	O	Serial bus 2 (for data output)
83	PF7	O	Reset signal output
84	DACK1	O	Output of DMA-ACK 0 to AV DEC
85	DACK0	O	Output of DMA-ACK 1 to AV DEC
86	DREQ1	I	Input of DMA-REQ 0 from AV DEC
87	DREQ0	I	Input of DMA-REQ 1 from AV DEC
88	INT3	I	Input of interrupt from HGA
89	SC1	O	Serial clock output
90	GND	-	Ground
91	X1	O	Clock output (12.5MHz)
92	X0	I	Clock input (12.5MHz)
93	VCC5	-	Power supply
94	INT1	I	Input of interrupt ARP and SERVO DSP
95	INT0	I	Input of interrupt from AV DEC
96	PB0	I	Rear panel lime input select (“H”: DISC “L”: EXT)
97	PB1	O	Chip select signal to IF CON
98	PB2	O	Chip select signal to DAC (Lt and Rt)
99	PB3	O	Chip select signal to DAC (L and R)
100	PB4	O	DVD/CD select (“H”: 44.1kHz “L”: 48kHz)

SECTION 6
TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press [TITLE], [CLEAR], [POWER] buttons on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed.
To execute each function, select the desired menu and press its number on the remote commander.
To exit from the Test Mode, press the POWER button.

```
Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
Exit: Power Key
_
Model    : DPX12xxxx
Revision: 1.xxxx
```

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.
On the Test Mode Menu screen, press [0] key on the remote commander, and the following check menu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
_
```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check
This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```
    ### Syscon Diagnosis ###

Diag All Check
No. 2 Version

 2-3. ROM Check Sum
Check Sum = xxxx



Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.
Following the message, press [NEXT] key to go to the next item, or [PREV] key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press [STOP] or [ENTER] key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```
    ### Syscon Diagnosis ###




 3-3. EEPROM Check
Error 03: EEPROM Write/Reed N
Address    : 00000001
Write Data : 2492
Read Data  : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

Press [STOP] key to quit the diagnosis, or [PREV] key to repeat the same item where an error occurred, or [NEXT] key to continue the check from the item next to faulty item.

Selecting 2 and subsequent items calls the submenu screen of each item.
For example, if "5. Supply" is selected, the following submenu will be displayed.

```
    ### Syscon Diagnosis ###
           Check Menu
          No. 5 Supply
0. Quit
1. All
2. ARP Register Check
3. ARP to RAM Data Bus
4. ARP to RAM Address Bus
5. ARP RAM Check
_
```

0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check
This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.

Selecting 2 and subsequent items executes respective menus and outputs the results.
For the contents of each submenu, see “Check Items List”.

General Description of Checking Method

2. Version

(2-2) Revision
ROM revision number is displayed.
Error: Not detected.
The revision number defined in the source file of ROM (IC205) is displayed with four digits.

(2-3) ROM Check Sum
Check sum is calculated.
Error: Not detected.
The 8-bit data are added at addresses 0x000F0000 ~ 0x002EFFFF of ROM (IC205) and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type
Model code is displayed.
Error: Not detected.
The model code read from EEPROM (IC201) is displayed with 2-digit hexadecimal number.

	Model Type	
DVP-K330 (Chinese)	1	0
DVP-K330 (EXCEPT Chinese)	1	1

(2-5) Region
Region code is displayed.
Error: Not detected.
The region code determined from the model code is displayed.

3. Peripheral

(3-2) Gate Array Check
Data write → read, and accord check
Error 02: Gate array write/read discord
Data 0x00~0xFF are written to the address 0xF of GA (IC601), then read and checked if they accord.

(3-3) EEPROM Check
Data write → read, and accord check
Error 03: EEPROM write/read discord
Data 0x9249, 0x2942, 0x4294 are written to addresses 0x00~0xFF of EEPROM (IC201), then read and checked. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

4. Servo

(4-2) Servo DSP Check
Data write → read, and accord check
Error 12: Read data discord
Data 0x9249, 0x2942, 0x4294 are written to the address 0x602 of RAM in the Servo DSP (IC701), then read and checked.

(4-3) DSP Driver Test
Test signal data → DSP Driver
Error: Not detected.
Caution: Do not conduct this test with a mechanical deck connected.
The maximum voltage is applied to the Servo Driver IC (IC801, IC802). If mechanical deck is connected, the motor and optics could be damaged. Disconnect mechanical deck following the output message, then enter specified 4- or 5-digit number from the remote commander, and press the [ENTER]. The test is conducted only when the input data accord. Check the output level, then press the [NEXT] to finish the test.
This test is skipped if “All” is selected.

Supplement: How to disconnect mechanical deck
Disconnect flat cables connected to the CN002 and CN003 of MB-82 board. Also, disconnect harness from the CN011.

5. Supply

Caution: Do not conduct this check with a mechanical deck connected.
An access is made to the stream supply and servo control IC (IC303) and external RAM (IC304) using check data. If mechanical deck is connected, the motor and optics could be damaged. This check is also executed by the “All” menu item.

Supplement: How to disconnect mechanical deck
Disconnect flat cables connected to the CN002 and CN003 of MB-82 board. Also, disconnect harness from the CN011.

(5-2) ARP Register Check
Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF are written to the TMAX register (address 0xC6) in ARP (IC303), then they are read and checked.

(5-3) ARP to RAM Data Bus
Data write → read, and accord check
Error 09: ARP ←→ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC304) connected to the ARP (IC303) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus
Data write → other address read discord check
Error 10: ARP → RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).
Before starting the test, all addresses of RAM (IC304) are cleared to 0x0000.
First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.

If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
    ### Syscon Diagnosis ###




 5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address    : 0000A55A
Write Data : 00000000
Read Data  : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
_
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check
Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC304) connected to the ARP (IC303) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM
Data write → read, and accord check
Error 13: AVD RAM read data discord
The program code data stored in ROM (IC205) are copied to all areas of RAM (IC402, IC403) connected to the AVD (IC401) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.

(6-3) 1930 SP
ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC205) are transferred to the RAM (IC402, IC403) in AVD (IC401), and output as video signals from the AVD (IC401).
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar
AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

8. Audio

(8-2) ARP → 1930
Error 14: ARP → 1930 video NG
15: ARP → 1930 audio NG

(8-3) Test Tone
A pink noise signal is output from the AVD (IC401) through optical coaxial digital terminal and analog audio terminal.
Error: Not detected.
All channels → 2ch Left → 2ch Right are checked in this order.

(8-4) 2725 Check
Data write → read, and accord check
Error 07: 2725 read data discord
The data 0x249, 0x492, 0x924 are written to addresses 0 and 1 of Karaoke DSP 2725 (IC901), then read and checked if they accord.

Check Items List

2) Version
(2-2) Revision
(2-3) ROM Check Sum
(2-4) Model Type
(2-5) Region

3) Peripheral
(3-2) Gate Array Check
(3-3) EEPROM Check

4) Servo
(4-2) Servo DSP Check
(4-3) DSP Driver Test

5) Supply
(5-2) ARP Register Check
(5-3) ARP to RAM Data Bus
(5-4) ARP to RAM Address Bus
(5-5) ARP RAM Check

6) AV Decoder
(6-2) 1930 RAM
(6-3) 1930 SP

7) Video
(7-2) Color Bar

8) Audio
(8-2) ARP → 1930
(8-3) Test Tone
(8-4) 2725 Check

Error Codes List

00: Error not detected
01: RAM write/read data discord
02: Gate array NG
03: EEPROM NG
04: Flash memory clear error
05: Flash memory write error
06: Flash memory read data discord
08: ARP register read data discord
09: ARP ←→ RAM data bus error
10: ARP ←→ RAM address bus error
11: ARP RAM read data discord
12: Servo DSP NG
13: 1930 SDRAM NG
14: ARP → 1930 video NG
15: ARP → 1930 audio NG
16: 1910 UCODE download NG
17: System call error (function not supported)
18: System call error (parameter error)
19: System call error (illegal ID number)
20: System call error (time out)
21: NAND Flash faulty blocks exceed 10
90: Error occurred
91: User verification NG
92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press [1] key on the remote commander, and the drive auto adjustment menu will be displayed.

```
   ## Drive Auto Adjustment ##

         Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. SACD



                    Exit: RETURN
```

Normally, [0] is selected to adjust DVD (single layer), CD, DVD (dual layer), and SACD in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen.
The disc used for adjustment must be the one specified for adjustment. However, for SACD disc, use the player with initial data if the disc is not available.

0. ALL

Select [0] and press [ENTER] key, and the servo set data in EEPROM will be initialized. Then, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. SACD disc are adjusted in this order. Each time one disc was adjusted, it is ejected. Replace it with the specified disc following the message. Though the message to confirm whether discs other than SACD disc are adjusted is not displayed, you can finish the adjustment if pressing the [STOP] button. During adjustment of each disc, the measurement for disc type judgment is made. As automatic adjustment does not judge the disc type unlike conventional models, take care not to insert wrong type discs. Also, do not give a shock during adjustment.

1. DVD-SL (single layer)

Select [1], insert DVD single layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps
1. SLED TILT Reset
2. Disc Check Memory SL
3. Wait 300 msec
4. Set Disc Type SL
5. LD ON
6. Spdl Start
7. Wait 1 sec
8. Focus Servo ON 0
9. Auto Track Offset Adjust
10. CLVA ON
11. Wait 500 msec
12. Tracking ON
13. Wait 1 sec
14. Sled ON
15. Check CLV Lock
16. Auto LFO Adjust
17. Auto Focus Offset Adjust
18. Auto Tilt Position Adjust
19. Auto Focus Gain Adjust
20. Auto Focus Offset Adjust
21. EQ Boost Adjust
22. Auto LFO Adjust
23. Auto Track Gain Adjust
    Search Check
24. 32Tj Fwd
25. 32Tj Rev
26. 500Tj Fwd
27. 500Tj Rev

28. All Servo Stop
29. Eep Copy Loop Filter Offset

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Rest
2. Disc Check Memory CD
3. Wait 500 msec
4. Set Disc Type CD
5. LD ON
6. Spdl Start
7. Wait 500 msec
8. Focus Servo ON 0
9. Auto Track Offset Adjust

10. CLVA ON
11. Wait 500 msec
12. Tracking ON
13. (TC Display Start)
14. Wait 1 sec
15. Jitter Display Start
16. Sled ON
17. Check CLV ON
18. Auto LFO Adjust
19. Auto Focus Offset Adjust
20.
21. Auto Focus Gain Adjust
22. Auto Focus Offset Adjust
23. Eq Boost Adjust
24. Auto LFO Adjust
25. Auto Track Gain Adjust
    Search Check
26. 32Tj Fwd
27. 32Tj Rev
28. 500Tj Fwd
29. 500Tj Rev

30. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Wait 500 msec
4. Set Disc Type DL
5. LD ON
6. Spdl Start
7. Wait 1 sec
   Layer 1 Adjust
8. Focus Servo ON 0
9. Auto Track Offset Adjust

10. Clva ON
11. Wait 500 msec
12. Tracking ON
13. Wait 500 msec
14. Sled ON
15. Check CLV Lock
16. Auto Loop Filter Offset Auto Focus Adjust
17.
18. Auto Focus Gain Adjust
19. Auto Focus Offset Adjust
20. Eq Boost Adjust
21. Auto Loop Filter Offset
22. Auto Track Gain Adjust
    Search Check
23. 32Tj Fwd
24. 32Tj Rev
25. 500Tj Fwd
26. 500Tj Rev
    Layer 0 Adjust
27. Fj (L1 -> L0)
28. Auto Track Offset Adjust L0

29. Clva ON
30. Wait 500 msec
31. Tracking ON
32. Wait 500 msec
33. Sled ON
34. Check CLV Lock
35. Auto Focus Filter Offset
36. Auto Focus Adjust
37.
38. Auto Focus Gain Adjust
39. Auto Focus Offset Adjust
40. Eq Boost Adjust
41. Auto Loop Filter Offset
42. Auto Track Gain Adjust
    Search Check
43. 32Tj Fwd
44. 32Tj Rev
45. 500Tj fwd
46. 500Tj Rev
    Layer Jump Check
47. Lj (L0 -> L1)
48. Lj (L1 -> L0)

49. All Servo Stop

4. SACD

Select [4], insert SACD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM. However, if SACD disc is not available, use the player with initial data, skipping the SACD adjustment. In this case, you can finish the adjustment if pressing the [STOP] button.

SACD Adjustment Steps
1. Sled Tilt Reset
2. Set Disc Type CD
3. LD ON
4. Spdl Start
5. Wait 500 msec
6. Focus Servo ON 0
7. Auto track Offset Adjust
8.
9. CLVA ON
10. Wait 500 msec
11. Tracking ON
12. Wait 1 sec
13. Sled ON
14. Check CLV ON
15. Auto Focus Offset Adjust
17.
18. Auto Focus Gain Adjust
19. Auto Focus Offset Adjust
20. Eq Boost Adjust
21. Auto LFO Adjust
22. Auto Track Gain Adjust

23. 32Tj Fwd
24. 32Tj Rev
25. 500Tj Fwd
26. 500Tj Rev

27. All Servo Stop */

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
  ## Drive Manual Operation ##

         Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

                Exit: Return
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
   The disc type must be set after a disc was loaded.
   The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER]	Power OFF
[STOP]	Servo stop
[OPEN/CLOSE]	Stop+Eject/Loading
[RETURN]	Return to Operation Menu or Test Mode Menu
[NEXT], [PREV]	Transition between sub modes of menu
[1] to [9], [0]	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
             Disc Check



1. SL Disc Check
2. CD Disc Check
3. DL Disc Check



0. Reset SLED TILT
```

On this screen, the mirror time is measured to judge the disc and it is written to the EEPROM. First load DVD SL disc and press [1], next load CD disc and press [2], and finally load DVD DL disc and press [3].
The adjustment must be executed more than once after default data were written. External vibration or shock to the player must not be given. Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F.
Check that the value of CD is larger than that of DVD.
When those values are beyond a range perform this adjustment again.
From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
                        EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory".
Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.
In performing manual operation, the disc type must be set.
Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
        SA.      SI.    EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

```
             Disc Type
1. Disc Type Auto Check
2. DVD SL   12 cm
3. DVD DL   12 cm
4. CD       12cm
5. SACD     12 cm
6. DVD SL   8 cm
7. DVD DL   8 cm
8. CD       8 cm
9. SACD     8 cm
0. Reset SLED TILT
         TC.——:——:—— EMG. 00
CD   12 cm
```

Display when CD 12cm disc was selected

[0] Reset SLED TILT	Reset the Sled and Tilt to initial position.
[1] Disk Type Check	Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct. If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
[2] to [9]	Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

```
          Servo Control
1. LD          Off R.Sled FWD
2. SP          Off L.Sled REV
3. Focus       Off
4. TRK.        Off
5. Sled        Off
6. CLVA        Off
7. FCS. Srch Off


0. Reset SLED TILT
       SA.————SI.—— EMG. 00
DVD SL 12 cm
```

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked.
The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0	Reset SLED TILT	Reset the Sled and Tilt to initial position.
1	LD	Turn ON/OFF the laser.
2	SP	Turn ON/OFF the spindle.
3	Focus	Search the focus and turn on the focus.
4	TRK	Turn ON/OFF the tracking servo.
5	Sled	Turn ON/OFF the sled servo.
6	CLVA	Turn ON/OFF normal servo of spindle servo.
7	FCS. Srch	Apply same voltage as that of focus search to the focus drive to check the focus drive system.
→	Sled FWD	Move the sled outward. Perform this operation with the tracking servo turned off.
←	Sled REV	Move the sled inward. Perform this operation with the tracking servo turned off.
↑	Tilt UP	Move the tilt upward.
↓	Tilt DOWN	Move the tilt downward.

The following menus are normally not used.

3. Track/Layer Jump

4. Manual Adjustment

5. Auto Adjustment

The persons who do not know well about these menus should not use them.

6. Memory Check

```
EEPROM DATA
                CD       – DVD –
ID No. 00      SACD     SL  L0  L1
Focus Gain     xx xx    xx  xx  xx
TRK. Gain      xx xx    xx  xx  xx
Focus Offset   xx xx    xx  xx  xx
TRK. Offset    xx xx    xx  xx  xx
L. F. Offset   xx xx    xx  xx  xx
EQ Boost       xx xx    xx  xx  xx
Jitter         xx xx    xx  xx  xx
Mirror Time    xx xx    xx  xx  xx
_
CLEAR: Default Set
```

This screen displays current servo adjusted data stored in the EEPROM. Though adjusted data can be initialized with the CLEAR key, they cannot be restored after initialization.
So, before clearing, make a note of the adjusted data.
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

6-6. MECHA AGING

```
       ### Mecha Aging ###



Press OPEN key



Abort: STOP key
```

On the Test Mode Menu screen, selecting 3 executes the aging of mechanism. First, open the tray and load a disc. Press the PLAY key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the STOP key. After the operation has stopped, unload the disc and press again the STOP key or the RETURN key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

```
      ### MEG. History ###

Laser Hours     CD   xxxxxxxh
                DVD  xxxxxxxh

1. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

2. 00 00 00 00  00 00 00 00
   00 00 00 00  00 00 00 00

Select: 1 – 9   Scroll: UP/DOWN
(1: Last EMG.)   Exit: Return
```

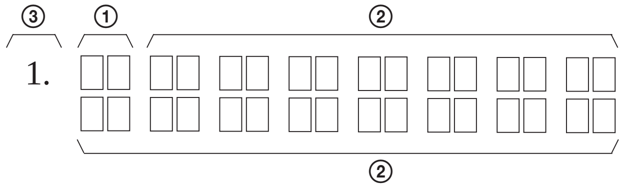
On the Test Mode Menu screen, selecting 4 displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with ↑ key or ↓ key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

Clearing laser hours
◎ Press DISPLAY and CLEAR keys in this order.
Both CD and DVD data are cleared.
Clearing emergency history
◎ Press TITLE and CLEAR keys in this order.
Initializing set up data
◎ Press DVD and CLEAR keys in this order.
The data have been initialized when “Set Up Initialized” message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History



① : Emergency Code
② : Don't Care
These codes are used for verification of software designing.
③ : Historical order 1 to 9

Emergency Codes List

10: Communication to IC001 (TK-51 board) failed.
11: Each servo for focus, tracking, and spindle is unlocked.
12: Communication to EEPROM, IC201 (MB-82 board) failed.
13: Writing of hours meter data to EEPROM, IC201 (MB-82 board) failed.
14: Communication to Servo DSP IC701 (MB-82 board) failed, or Servo DSP is faulty.
20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
21: Tilt servo operation error
22: Syscon made a request to move the tilt servo to wrong position.
23: Sled servo operation error
24: Syscon made a request to move the sled servo to wrong position.
30: Tracking balance adjustment error
31: Tracking gain adjustment error
32: Focus balance adjustment error
33: Focus bias adjustment error
34: Focus gain adjustment error
35: Tilt servo adjustment error
36: RF equalizer adjustment error
37: RF group delay adjustment error
38: Jitter value after adaptive servo operation is too large.
40: Focus servo does not operate.
41: With a dual layer (DL) disc, focus jump failed.50: CLV (spindle) servo does not operate.
51: Spindle does not stop.
60: With a DVD disc, Syscon made a request to seek nonexistent address.
61: With a CD disc, Syscon made a request to seek nonexistent address.
62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
63: With a DVD disc, seeking of target address failed.
64: With a CD disc, seeking of target address failed.
65: With a CD disc, seeking of target index failed.
70: With a DVD disc, physical information data could not be read.
71: With a CD disc, TOC data could not be read.
80: Disc type judgment failed.
81: As disc type judgment failed, retry was repeated.
82: As disc type judgment failed, a measurement error occurred.
83: Disc type could not be judged within the specified time.
84: Illegal command code was received from Syscon.
85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION

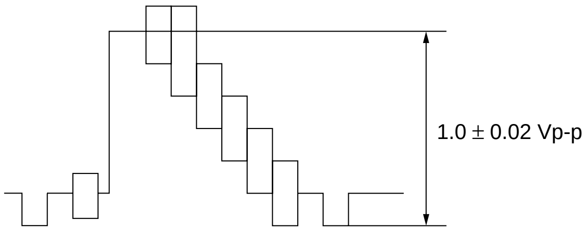
```
   ## Version Information ##

IF con.    Ver. x. xxx (xxxx)
           Group    00

SYScon.    Ver. x. xxx (xxxx)
           Model    xx
           Region   0x
           SW1      ??
           SW2      ??

Exit: RETURN
```

On the Test Mode Menu screen, selecting [5] displays the ROM version and region code.
The parenthesized hexadecimal number in version field is checksum value of ROM.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point : LINE OUT VIDEO
(75 Ω terminating resistance)
Measuring instrument : Oscilloscope
Adjustment device : RV401 on MB-82 board
Specified value : 1.0 ± 0.02 Vpp



SECTION 7
ELECTRICAL ADJUSTMENTS

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

1) Color monitor TV
2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
3) Frequency counter (over 8 digits)
4) Digital voltmeter
5) Standard commander (RMT-D108E)
6) DVD reference disc
   HLX-501 (J-6090-071-A) (dual layer)
   HLX-503 (J-6090-069-A) (single layer)
   HLX-504 (J-6090-088-A) (single layer)
   HLX-505 (J-6090-089-A) (dual layer)
7) SACD reference disc
   HLXA-509 (J-6090-090-A)

7-1. POWER SUPPLY ADJUSTMENT

1. Power Supply Check (HS-030SH/030SU BOARD)

Mode	E-E
Instrument	Digital voltmeter
+5 V Check	
Test point	CN202 pin ⑤
Specification	5.0 ± 0.2 Vdc
+3.3 V Check	
Test point	CN202 pin ⑦
Specification	3.3 ± 0.2 Vdc
EVER+5 V Check	
Test point	CN203 pin ②
Specification	5.0 ± 0.2 Vdc
P_CONT Check	
Test point	CN203 pin ①
Specification	4V – 5 Vdc
A +12 V Check	
Test point	CN202 pin ①
Specification	$9.5^{+1.5}_{-0.5}$ Vdc
–12 V Check	
Test point	CN203 pin ⑤
Specification	–12.0 ± 1.0 Vdc
M +12 V Check	
Test point	CN202 pin ②
Specification	12.0 ± 1.0 Vdc

Checking method:

1) Confirm that each voltage satisfies the specification.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-82 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV401
Specification	1.0 ± 0.02 Vp-p

Adjusting method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Adjust the RV401 to attain 1.0 ± 0.02 Vp-p.

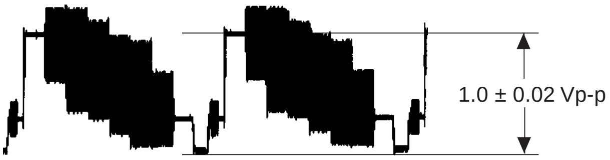


Figure 7-1

2. S-terminal Output Check (MB-82 BOARD)

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) In the test mode initial menu “6” Video Level Adjustment, set so that color bars are generated.
2) Confirm that the S-Y level is 1.0 ± 0.1 Vp-p.

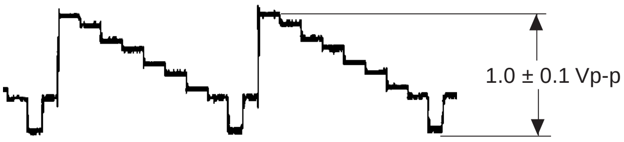


Figure 7-2

3. Checking Component Video Output B-Y (MB-82 BOARD)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (B-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the B-Y level is 700 ± 70 mVp-p.

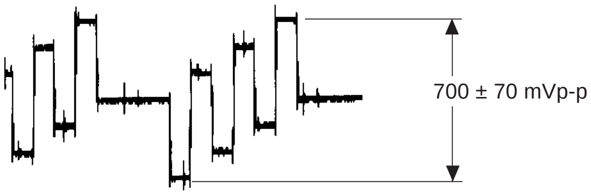


Figure 7-3

4. Checking Component Video Output R-Y (MB-82 BOARD)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (R-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 ± 70 mVp-p

Checking method:

1) Confirm that the R-Y level is 700 ± 70 mVp-p.

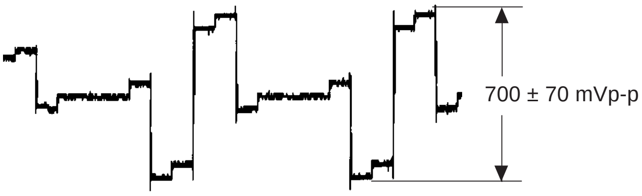


Figure 7-4

5. Checking Component Video Output Y (MB-82 BOARD)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.0 ± 0.1 Vp-p

Checking method:

1) Confirm that the Y level is 1.0 ± 0.1 Vp-p.

Figure 7-5

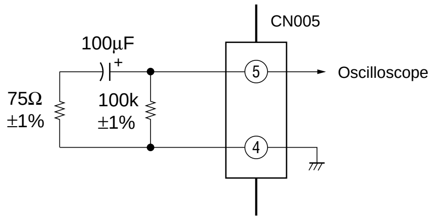
6. Checking S Video Output S-C (MB-82 BOARD)

<Purpose>

This checks whether the S-C satisfies the NTSC Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	CN005 pin ⑤
Instrument	Oscilloscope
Specification	286 ± 50 mVp-p

Connection:



Checking method:

1) Confirm that the S-C burst is 286 ± 50 mVp-p.

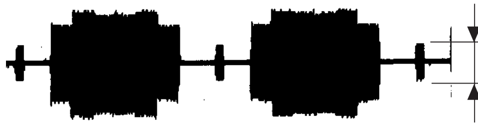
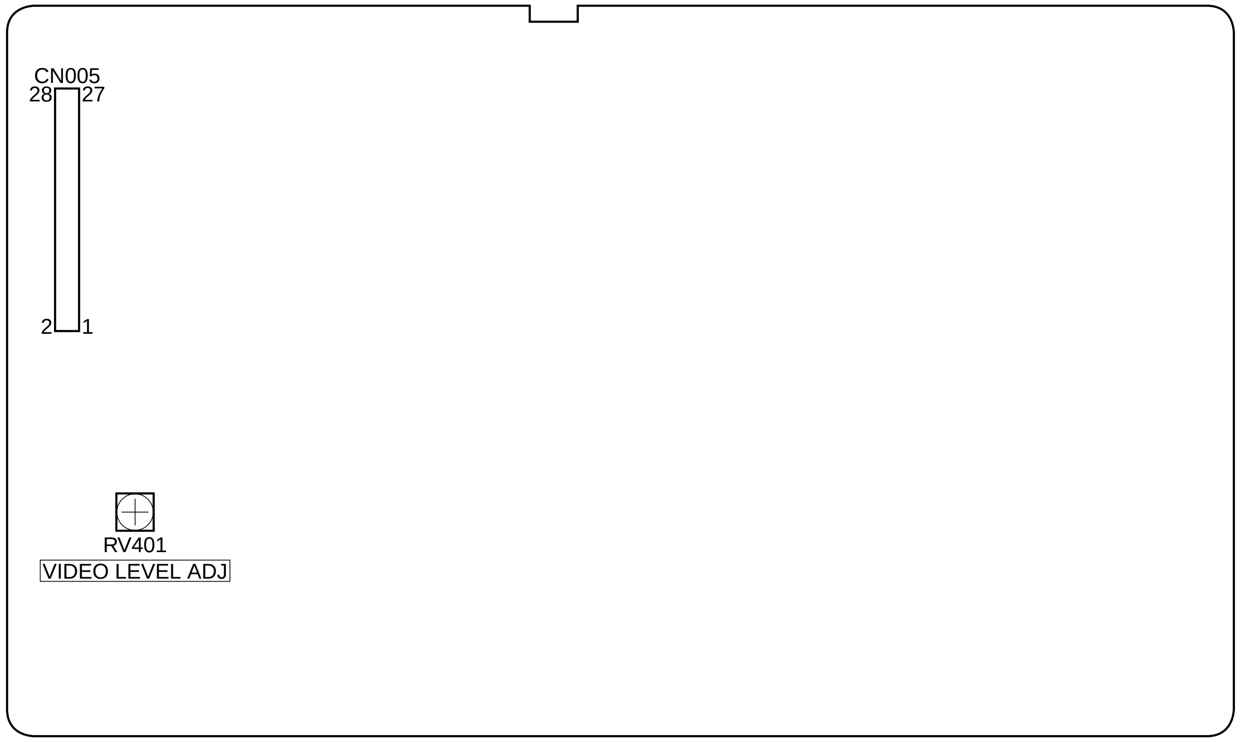


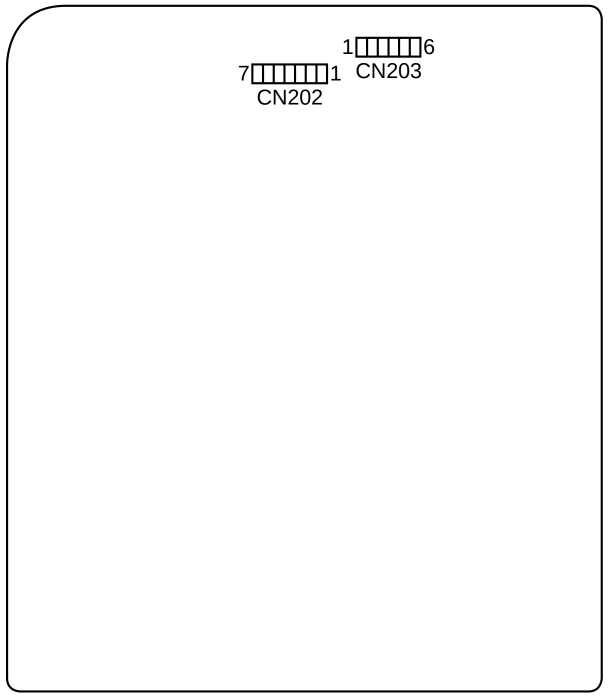
Figure 7-6

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-82 BOARD (SIDE A)



HS-030SH/030SU BOARD (SIDE A)



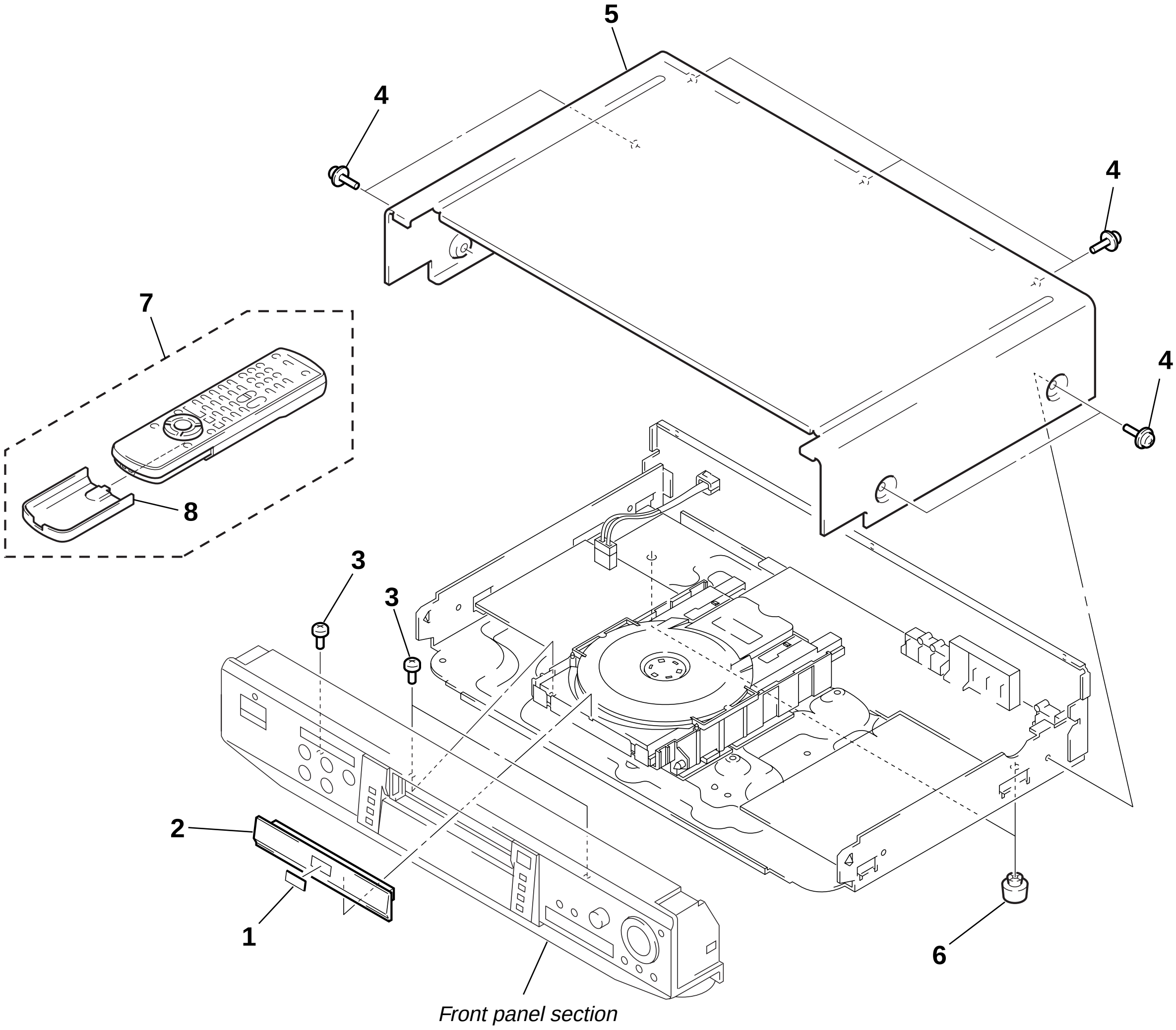
SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories and packing materials are given in the last of the electrical parts list.

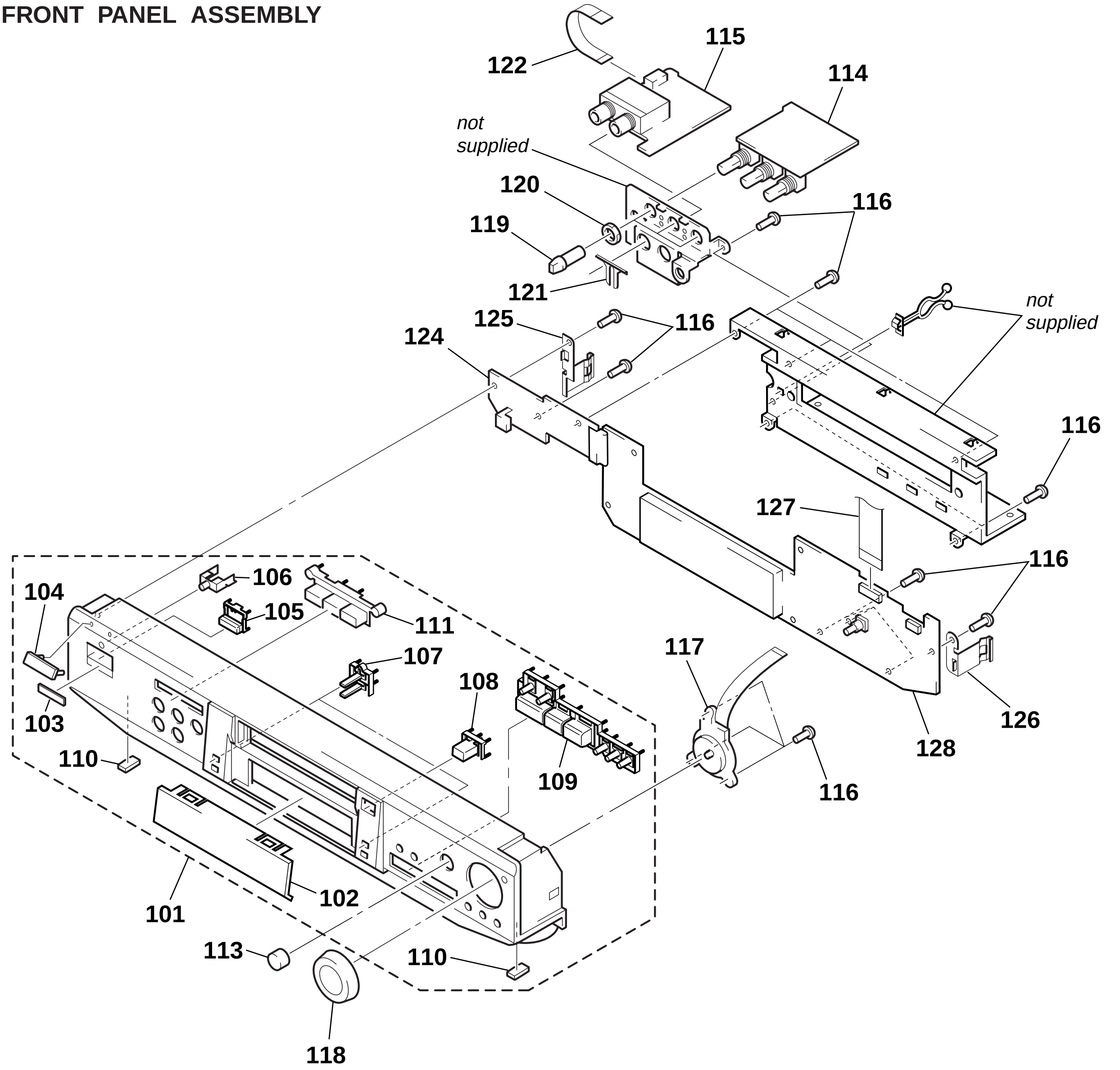
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

8-1-1. CASE ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	3-975-726-61	EMBLEM, DVD (Singapore)	
1	3-975-726-81	EMBLEM, DVD (EXCEPT Singapore)	
2	3-053-498-11	COVER (BK), TRAY (Hong Kong, Chinese)	
2	3-053-498-21	COVER (BK), TRAY (Singapore)	
2	3-053-498-51	COVER (BK), TRAY (Taiwan)	
3	3-970-608-01	SUMITITE (B3), +BV	
4	3-710-901-41	SCREW, TAPPING (Singapore)	
4	3-710-901-51	SCREW, TAPPING (EXCEPT Singapore)	
5	3-055-503-11	CASE (M), TOP (Hong Kong, Chinese)	
5	3-055-503-21	CASE (M), TOP (Singapore)	
5	3-055-503-31	CASE (M), TOP (Taiwan)	
6	3-973-973-01	FOOT (S)	
7	1-418-320-51	COMMANDER, STANDARD (RMT-D108E)	
8	3-053-633-01	COVER, BATTERY (for RMT-D108E)	

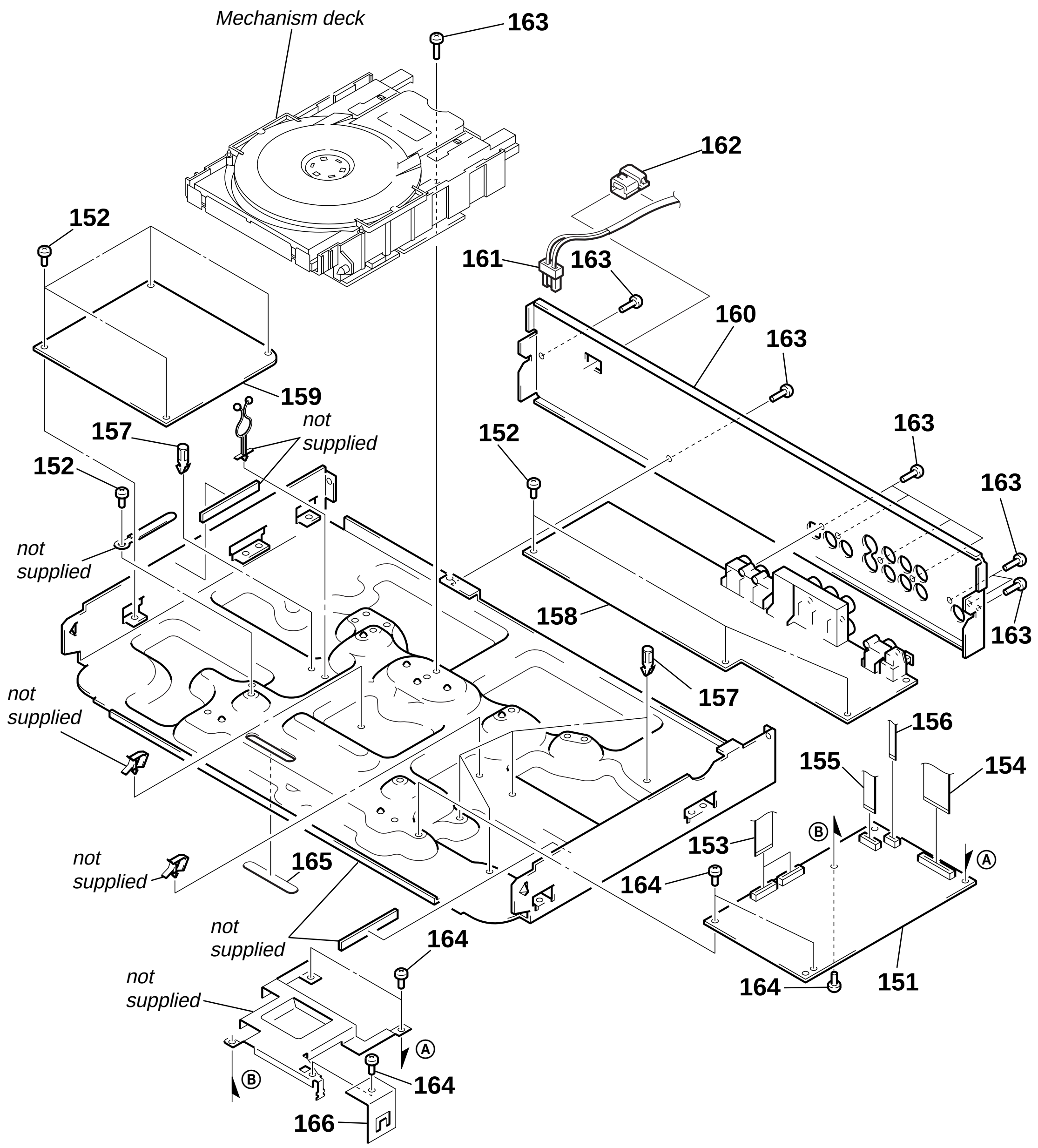
8-1-2. FRONT PANEL ASSEMBLY



Ref. No.	Part No.	Description	Remark
101	X-3949-441-1	PANEL ASSY, FRONT (Hong Kong, Chinese)	
101	X-3949-442-2	PANEL ASSY, FRONT (Singapore)	
101	X-3949-683-1	PANEL ASSY, FRONT (Taiwan)	
102	3-054-221-01	WINDOW (FL)	
103	3-974-997-41	WINDOW, REMOTE CONTROL (EXCEPT Singapore)	
103	3-974-997-51	WINDOW, REMOTE CONTROL (Singapore)	
104	4-217-485-01	EMBLEM (5-A), SONY (Singapore)	
104	4-963-404-41	EMBLEM (5-A), SONY (EXCEPT Singapore)	
105	3-053-954-11	BUTTON, POWER (Singapore)	
105	3-053-954-21	BUTTON, POWER (EXCEPT Singapore)	
106	3-053-955-01	INDICATOR, POWER	
107	3-054-219-01	BUTTON (PROG) (Singapore)	
107	3-054-219-11	BUTTON (PROG) (EXCEPT Singapore)	
108	3-054-651-11	BUTTON (OPEN) (EXCEPT Singapore)	
108	3-054-651-21	BUTTON (OPEN) (Singapore)	
109	3-054-220-11	BUTTON (PLAY) (EXCEPT Singapore)	
109	3-054-220-21	BUTTON (PLAY) (Singapore)	
110	3-053-504-11	CUSHION	
111	3-054-211-01	BUTTON (KEY CON) (EXCEPT Singapore)	
111	3-054-211-11	BUTTON (KEY CON) (Singapore)	
113	3-053-482-11	KNOB (ACS) (EXCEPT Singapore)	
113	3-053-482-21	KNOB (ACS) (Singapore)	

Ref. No.	Part No.	Description	Remark
* 114	A-6065-280-A	VR-71 BOARD, COMPLETE (EXCEPT Taiwan)	
* 114	A-6065-286-A	VR-71 BOARD, COMPLETE (Taiwan)	
* 115	A-6065-279-A	MC-121 BOARD, COMPLETE (EXCEPT Taiwan)	
* 115	A-6065-285-A	MC-121 BOARD, COMPLETE (Taiwan)	
116	4-951-620-01	SCREW (2.6X8), +BVTP	
117	1-771-564-11	SWITCH, TACTILE	
118	3-053-496-01	STICK (L), CURSOR (Hong Kong, Chinese)	
118	3-053-496-12	STICK (L), CURSOR (Singapore)	
118	3-053-496-41	STICK (L), CURSOR (Taiwan)	
119	3-054-217-01	KNOB, VOLUME (Singapore)	
119	3-054-217-11	KNOB, VOLUME (Hong Kong, Chinese)	
119	3-054-217-21	KNOB, VOLUME (Taiwan)	
120	2-118-268-01	NUT (M9), HEXAGON	
121	3-955-377-01	PLATE (2GANG), MOUNT	
122	1-790-170-11	CABLE, FLEXIBLE FLAT (FVM-10)	
* 124	A-6065-278-A	FR-153 BOARD, COMPLETE (EXCEPT Taiwan)	
* 124	A-6065-284-A	FR-153 BOARD, COMPLETE (Taiwan)	
125	3-054-216-01	PLATE (SL), GROUND	
126	3-053-512-01	PLATE (S), GROUND	
127	1-790-167-11	CABLE, FLEXIBLE FLAT (FMF-35)	
* 128	A-6065-277-A	FL-103 BOARD, COMPLETE (EXCEPT Taiwan)	
* 128	A-6065-283-A	FL-103 BOARD, COMPLETE (Taiwan)	

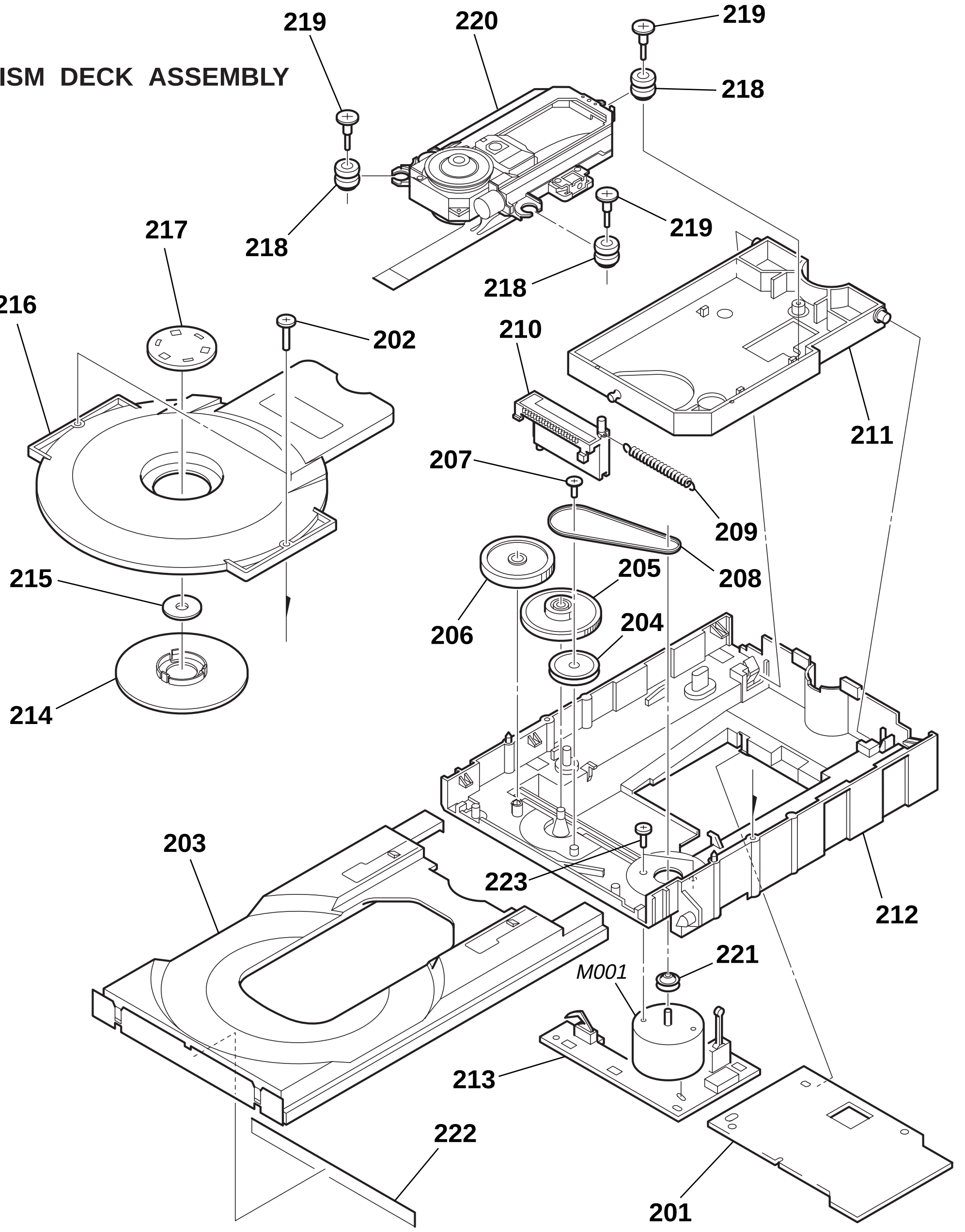
8-1-3. CHASSIS ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 151	A-6065-281-A	MB-82 BOARD, COMPLETE (Chinese)	
* 151	A-6065-282-A	MB-82 BOARD, COMPLETE (Singapore, Hong Kong)	
* 151	A-6065-288-A	MB-82 BOARD, COMPLETE (Taiwan)	
152	3-970-608-01	SUMITITE (B3), +BV	
153	1-790-166-11	CABLE, FLEXIBLE FLAT (FMT-25)	
154	1-790-163-11	CABLE, FLEXIBLE FLAT (FMA-7)	
155	1-790-169-11	CABLE, FLEXIBLE FLAT (FMA-10)	
156	1-790-165-11	CABLE, FLEXIBLE FLAT (FMA-9)	
* 157	3-669-610-00	SPACER	
* 158	A-6065-276-A	AU-214 BOARD, COMPLETE (EXCEPT Taiwan)	
* 158	A-6065-287-A	AU-214 BOARD, COMPLETE (Taiwan)	
* 159	1-468-359-11	POWER BLOCK (HS-030SH) (EXCEPT Taiwan)	
* 159	1-468-359-31	POWER BLOCK (HS-030SU) (Taiwan)	
160	3-053-507-31	PANEL, REAR (Taiwan)	
160	3-053-507-81	PANEL, REAR (EXCEPT Taiwan)	
⚠161	1-769-744-91	CORD, POWER (Singapore, Hong Kong)	
⚠161	1-782-510-11	CORD, POWER (Chinese)	
⚠161	1-790-380-11	CORD, POWER (Taiwan)	
162	4-966-267-11	BUSHING (FBS001), CORD	
163	3-970-608-51	SUMITITE (B3), +BV	
164	3-055-791-01	SUMITITE (B3) (RING), +BV	
165	3-055-418-11	COVER, EJECT	
166	3-054-650-01	SPRING, EMC	

8-1-4. MECHANISM DECK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

	Ref. No.	Part No.	Description	Remark
*	201	A-6065-275-A	TK-51 BOARD, COMPLETE (EXCEPT Taiwan)	
*	201	A-6065-289-A	TK-51 BOARD, COMPLETE (Taiwan)	
	202	7-685-136-19	SCREW +BTP 2.6X12 TYPE2 N-S	
	203	3-053-837-01	TRAY (Taiwan)	
	203	3-053-837-11	TRAY (EXCEPT Taiwan)	
	204	3-053-841-01	PULLEY GEAR (Taiwan)	
	204	3-053-841-11	PULLEY GEAR (EXCEPT Taiwan)	
	205	3-053-840-01	CAM DRIVING GEAR (Taiwan)	
	205	3-053-840-11	CAM DRIVING GEAR (EXCEPT Taiwan)	
	206	3-053-839-01	TRAY DRIVING GEAR	
	207	4-974-711-01	SCREW (2X5) (P TYIGHT), (+) PTTWH	
	208	3-053-842-01	BELT	
	209	3-053-849-01	SPRING, TENSION	
	210	3-053-838-01	CHUCK CAM (Taiwan)	
	210	3-053-838-11	CHUCK CAM (EXCEPT Taiwan)	
	211	3-053-836-01	BASE UNIT HOLDER (Taiwan)	
	211	3-053-836-11	BASE UNIT HOLDER (EXCEPT Taiwan)	
	212	3-053-835-01	BASE, LOADING (Taiwan)	
	212	3-053-835-11	BASE, LOADING (EXCEPT Taiwan)	
*	213	A-6066-013-A	MS-46 BOARD, COMPLETE (EXCEPT Taiwan)	
*	213	A-6066-012-A	MS-29 BOARD, COMPLETE (Taiwan)	
	214	3-053-845-01	CHUCK PLATE (Taiwan)	
	214	3-053-845-11	CHUCK PLATE (EXCEPT Taiwan)	
	215	3-053-844-01	YOKE (Taiwan)	
	215	3-053-844-11	YOKE (EXCEPT Taiwan)	
	216	3-053-848-01	CHUCK HOLDER (Taiwan)	
	216	3-053-848-11	CHUCK HOLDER (EXCEPT Taiwan)	
	217	3-053-846-01	YOKE HOLDER (Taiwan)	
	217	3-053-846-11	YOKE HOLDER (EXCEPT Taiwan)	
	218	3-053-847-01	INSULATOR	
	219	4-981-923-01	SCREW (M), STEP	
⚠	220	8-820-081-03	OPTICAL PICK-UP KHM-220AAA/J1RP	
	221	3-053-843-01	MOTOR PULLEY (Taiwan)	
	221	3-053-843-11	MOTOR PULLEY (EXCEPT Taiwan)	
	222	3-055-097-01	SEAL, TRAY DUST	
	223	7-621-775-10	SCREW +B 2.6X4	
	M001	1-541-632-11	MOTOR, DC (LOADING)	

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA. . : μA. . uPA. . : μPA. .
  uPB. . : μPB. . uPC. . : μPC. .
  uPD. . : μPD. .
- CAPACITORS
  uF: μF
- COILS
  uH: μH
- Not all of the parts for POWER BLOCK (HS-030SH/030SU) are listed.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6065-276-A	AU-214 BOARD, COMPLETE (EXCEPT Taiwan)			
*	A-6065-287-A	AU-214 BOARD, COMPLETE (Taiwan)			
		************************			
		(Ref.No. 2,000 Series)			
		< CAPACITOR >			
C302	1-126-926-11	ELECT	1000uF	20%	10V
C303	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C304	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C305	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C306	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C307	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C308	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C309	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C310	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C311	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C312	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C313	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C314	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C315	1-126-935-11	ELECT	470uF	20%	6.3V
C316	1-104-665-11	ELECT	100uF	20%	10V
C317	1-126-935-11	ELECT	470uF	20%	6.3V
C318	1-104-665-11	ELECT	100uF	20%	10V
C319	1-126-935-11	ELECT	470uF	20%	6.3V
C320	1-104-665-11	ELECT	100uF	20%	10V
C321	1-104-665-11	ELECT	100uF	20%	10V
C322	1-104-665-11	ELECT	100uF	20%	10V
C323	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C324	1-126-935-11	ELECT	470uF	20%	6.3V
C325	1-126-935-11	ELECT	470uF	20%	6.3V
C326	1-104-664-11	ELECT	47uF	20%	25V
C327	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C328	1-104-664-11	ELECT	47uF	20%	16V
C329	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C330	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C331	1-126-926-11	ELECT	1000uF	20%	10V
C332	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C343	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C344	1-126-960-11	ELECT	1uF	20%	50V
C345	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C350	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C351	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C353	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C354	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C355	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C401	1-104-665-11	ELECT	100uF	20%	10V
C404	1-104-665-11	ELECT	100uF	20%	10V
C405	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C406	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C431	1-104-664-11	ELECT	47uF	20%	25V
C432	1-104-664-11	ELECT	47uF	20%	25V
C433	1-104-665-11	ELECT	100uF	20%	25V
C434	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C435	1-104-665-11	ELECT	100uF	20%	25V
C436	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C437	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C438	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C439	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C440	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C442	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C443	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C447	1-136-850-11	FILM	0.1uF	5%	63V
C448	1-104-664-11	ELECT	47uF	20%	25V
C449	1-104-664-11	ELECT	47uF	20%	25V
C450	1-136-850-11	FILM	0.1uF	5%	63V
C453	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C454	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C455	1-104-665-11	ELECT	100uF	20%	25V
C456	1-104-664-11	ELECT	47uF	20%	25V
C457	1-126-965-11	ELECT	22uF	20%	50V
C458	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C459	1-104-664-11	ELECT	47uF	20%	16V
C460	1-104-664-11	ELECT	47uF	20%	25V
C461	1-164-346-11	CERAMIC CHIP	1uF		16V
C462	1-164-346-11	CERAMIC CHIP	1uF		16V
		< CONNECTOR >			
CN301	1-785-698-11	CONNECTOR, FFC/FPC 28P			
CN303	1-785-694-11	CONNECTOR, FFC/FPC 7P			
* CN402	1-564-005-11	PIN, CONNECTOR 6P			
CN403	1-785-696-11	CONNECTOR, FFC/FPC 15P			
		< DIODE >			
D301	8-719-988-61	DIODE 1SS355TE-17			
D302	8-719-975-40	DIODE RB411D			
D303	8-719-975-40	DIODE RB411D			

Ref. No.	Part No.	Description	Remark
D304	8-719-071-15	DIODE HZM6.8ZWA1TL	
D305	8-719-071-15	DIODE HZM6.8ZWA1TL	
D306	8-719-071-15	DIODE HZM6.8ZWA1TL	
D307	8-719-071-15	DIODE HZM6.8ZWA1TL	
D308	8-719-988-61	DIODE 1SS355TE-17	
D431	8-719-988-61	DIODE 1SS355TE-17	
D434	8-719-988-61	DIODE 1SS355TE-17	
D435	8-719-988-61	DIODE 1SS355TE-17	
D436	8-719-988-61	DIODE 1SS355TE-17	
		< EARTH TERMINAL >	
* ET301	1-537-738-21	TERMINAL, EARTH	
* ET302	1-537-738-21	TERMINAL, EARTH	
* ET303	1-537-738-21	TERMINAL, EARTH	
		< FERRITE BEAD >	
FB306	1-414-553-11	FERRITE 0uH	
FB307	1-414-553-11	FERRITE 0uH	
FB308	1-414-553-11	FERRITE 0uH	
FB309	1-414-553-11	FERRITE 0uH	
FB310	1-414-553-11	FERRITE 0uH	
FB311	1-414-553-11	FERRITE 0uH	
FB312	1-414-553-11	FERRITE 0uH	
FB313	1-414-553-11	FERRITE 0uH	
FB314	1-414-553-11	FERRITE 0uH	
FB315	1-414-553-11	FERRITE 0uH	
FB316	1-414-553-11	FERRITE 0uH	
FB317	1-414-553-11	FERRITE 0uH	
FB318	1-414-553-11	FERRITE 0uH	
FB319	1-414-553-11	FERRITE 0uH	
FB320	1-414-553-11	FERRITE 0uH	
FB321	1-414-553-11	FERRITE 0uH	
FB322	1-414-553-11	FERRITE 0uH	
FB341	1-414-135-11	FERRITE 0uH	
FB342	1-414-553-11	FERRITE 0uH	
		< IC >	
IC301	8-759-701-58	IC NJM78M08FA	
IC302	8-759-982-54	IC RC79M09FA	
IC303	8-759-563-79	IC BA7660F-E2	
IC321	8-759-563-79	IC BA7660F-E2	
IC431	8-759-909-71	IC BA4558F	
IC432	8-759-909-71	IC BA4558F	
IC505	8-749-921-12	IC GP1F32T (OPTICAL)	
IC506	8-759-909-71	IC BA4558F	
		< JACK >	
J303	1-784-675-21	JACK, PIN 3P (COMPONENT VIDEO OUT)	
J502	1-779-382-11	JACK, PIN 1P (COAXIAL)	
J505	1-785-535-11	JACK BLOCK, PIN (LINE OUT/S VIDEO OUT)	
		< JUMPER RESISTOR >	
JR402	1-216-295-91	SHORT 0	
JR405	1-216-295-91	SHORT 0	
JR406	1-216-296-91	SHORT 0	
JR999	1-216-295-91	SHORT 0	
		< COIL >	
L301	1-412-953-11	INDUCTOR 15uH	
L302	1-412-953-11	INDUCTOR 15uH	

Ref. No.	Part No.	Description	Remark
L303	1-412-953-11	INDUCTOR 15uH	
L304	1-412-953-11	INDUCTOR 15uH	
L305	1-412-953-11	INDUCTOR 15uH	
L306	1-412-953-11	INDUCTOR 15uH	
L307	1-412-963-11	INDUCTOR 100uH	
L321	1-412-963-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q301	8-729-216-22	TRANSISTOR 2SA1162	
Q302	8-729-216-22	TRANSISTOR 2SA1162	
Q303	8-729-216-22	TRANSISTOR 2SA1162	
Q321	8-729-421-19	TRANSISTOR UN2213	
Q322	8-729-424-08	TRANSISTOR UN2111	
Q341	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q433	8-729-421-19	TRANSISTOR UN2213	
Q435	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q436	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q437	8-729-216-22	TRANSISTOR 2SA1162	
Q438	8-729-424-08	TRANSISTOR UN2111	
Q439	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q440	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q441	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q442	8-729-421-19	TRANSISTOR UN2213	
Q443	8-729-046-97	TRANSISTOR 2SD1938 (F)-T (TX).SO	
Q444	8-729-421-19	TRANSISTOR UN2213	
Q445	8-729-421-19	TRANSISTOR UN2213	
Q446	8-729-421-19	TRANSISTOR UN2213	
Q447	8-729-421-19	TRANSISTOR UN2213	
Q448	8-729-421-19	TRANSISTOR UN2213	
		< RESISTOR >	
R303	1-216-042-00	METAL CHIP 510 5%	1/10W
R304	1-216-021-00	METAL CHIP 68 5%	1/10W
R305	1-216-042-00	METAL CHIP 510 5%	1/10W
R306	1-216-021-00	METAL CHIP 68 5%	1/10W
R307	1-216-073-00	METAL CHIP 10K 5%	1/10W
R308	1-216-021-00	METAL CHIP 68 5%	1/10W
R309	1-216-073-00	METAL CHIP 10K 5%	1/10W
R310	1-216-042-00	METAL CHIP 510 5%	1/10W
R311	1-216-042-00	METAL CHIP 510 5%	1/10W
R312	1-216-042-00	METAL CHIP 510 5%	1/10W
R313	1-216-073-00	METAL CHIP 10K 5%	1/10W
R314	1-216-073-00	METAL CHIP 10K 5%	1/10W
R315	1-216-097-91	RES, CHIP 100K 5%	1/10W
R317	1-216-073-00	METAL CHIP 10K 5%	1/10W
R320	1-216-073-00	METAL CHIP 10K 5%	1/10W
R321	1-216-073-00	METAL CHIP 10K 5%	1/10W
R322	1-216-073-00	METAL CHIP 10K 5%	1/10W
R323	1-216-021-00	METAL CHIP 68 5%	1/10W
R324	1-216-021-00	METAL CHIP 68 5%	1/10W
R325	1-216-021-00	METAL CHIP 68 5%	1/10W
R326	1-216-021-00	METAL CHIP 68 5%	1/10W
R327	1-216-021-00	METAL CHIP 68 5%	1/10W
R328	1-216-021-00	METAL CHIP 68 5%	1/10W
R334	1-216-097-91	RES, CHIP 100K 5%	1/10W
R335	1-216-042-00	METAL CHIP 510 5%	1/10W
R336	1-216-097-91	RES, CHIP 100K 5%	1/10W
R341	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R342	1-216-063-91	RES, CHIP 3.9K 5%	1/10W
R343	1-216-055-00	METAL CHIP 1.8K 5%	1/10W

Ref. No.	Part No.	Description			Remark
R344	1-216-033-00	METAL CHIP	220	5%	1/10W
R345	1-216-021-00	METAL CHIP	68	5%	1/10W
R346	1-216-025-91	RES, CHIP	100	5%	1/10W
R347	1-216-295-91	SHORT	0		
R348	1-216-097-91	RES, CHIP	100K	5%	1/10W
R413	1-216-049-91	RES, CHIP	1K	5%	1/10W
R415	1-216-041-00	METAL CHIP	470	5%	1/10W
R417	1-216-025-91	RES, CHIP	100	5%	1/10W
R418	1-216-073-00	METAL CHIP	10K	5%	1/10W
R419	1-216-073-00	METAL CHIP	10K	5%	1/10W
R420	1-216-073-00	METAL CHIP	10K	5%	1/10W
R421	1-216-073-00	METAL CHIP	10K	5%	1/10W
R422	1-216-073-00	METAL CHIP	10K	5%	1/10W
R423	1-216-073-00	METAL CHIP	10K	5%	1/10W
R424	1-216-073-00	METAL CHIP	10K	5%	1/10W
R425	1-216-073-00	METAL CHIP	10K	5%	1/10W
R431	1-216-109-00	METAL CHIP	330K	5%	1/10W
R432	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R433	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R434	1-216-109-00	METAL CHIP	330K	5%	1/10W
R435	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R436	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R437	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R438	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R439	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R441	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R442	1-216-041-00	METAL CHIP	470	5%	1/10W
R443	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R444	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R449	1-216-109-00	METAL CHIP	330K	5%	1/10W
R450	1-216-109-00	METAL CHIP	330K	5%	1/10W
R451	1-216-041-00	METAL CHIP	470	5%	1/10W
R452	1-216-041-00	METAL CHIP	470	5%	1/10W
R453	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R454	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R456	1-216-049-91	RES, CHIP	1K	5%	1/10W
R457	1-216-049-91	RES, CHIP	1K	5%	1/10W
R458	1-216-041-00	METAL CHIP	470	5%	1/10W
R459	1-216-041-00	METAL CHIP	470	5%	1/10W
R460	1-216-041-00	METAL CHIP	470	5%	1/10W
R462	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R463	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R464	1-216-049-91	RES, CHIP	1K	5%	1/10W
R465	1-216-049-91	RES, CHIP	1K	5%	1/10W
R466	1-216-097-91	RES, CHIP	100K	5%	1/10W
R467	1-216-073-00	METAL CHIP	10K	5%	1/10W
R468	1-216-073-00	METAL CHIP	10K	5%	1/10W
R469	1-216-073-00	METAL CHIP	10K	5%	1/10W
R470	1-216-073-00	METAL CHIP	10K	5%	1/10W
R471	1-216-073-00	METAL CHIP	10K	5%	1/10W
R472	1-216-073-00	METAL CHIP	10K	5%	1/10W
R473	1-216-073-00	METAL CHIP	10K	5%	1/10W
R474	1-216-073-00	METAL CHIP	10K	5%	1/10W
R475	1-216-073-00	METAL CHIP	10K	5%	1/10W
R476	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R477	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R478	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R479	1-216-049-91	RES, CHIP	1K	5%	1/10W
R480	1-216-109-00	METAL CHIP	330K	5%	1/10W
R481	1-216-097-91	RES, CHIP	100K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R483	1-216-073-00	METAL CHIP	10K	5%	1/10W
R484	1-216-025-91	RES, CHIP	100	5%	1/10W
R485	1-216-025-91	RES, CHIP	100	5%	1/10W
R486	1-216-103-00	METAL CHIP	180K	5%	1/10W
R488	1-216-295-91	SHORT	0		
R489	1-216-049-91	RES, CHIP	1K	5%	1/10W
R490	1-216-049-91	RES, CHIP	1K	5%	1/10W
R491	1-216-049-91	RES, CHIP	1K	5%	1/10W
R492	1-216-109-00	METAL CHIP	330K	5%	1/10W
R494	1-216-025-91	RES, CHIP	100	5%	1/10W

*	A-6065-277-A	FL-103 BOARD, COMPLETE (EXCEPT Taiwan)			
*	A-6065-283-A	FL-103 BOARD, COMPLETE (Taiwan)			
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					(Ref.No. 2,000 Series)
	3-053-487-01	HOLDER, FL TUBE (Taiwan)			
	3-053-487-11	HOLDER, FL TUBE (EXCEPT Taiwan)			
		< CAPACITOR >			
C201	1-124-259-11	ELECT	4.7uF	20%	16V
C203	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C205	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C209	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C210	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C211	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C214	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C215	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C216	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C217	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C218	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C219	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C220	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C221	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C222	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C223	1-128-131-11	ELECT	22uF	20%	50V
C233	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C235	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C236	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C237	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C238	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C239	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C240	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C241	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C242	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C243	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
		< CONNECTOR >			
CN201	1-778-446-11	CONNECTOR, BOARD TO BOARD 13P			
CN202	1-785-731-21	CONNECTOR, FFC/FPC 17P			
CN203	1-785-730-21	CONNECTOR, FFC/FPC 9P			
		< DIODE >			
D202	8-719-988-61	DIODE 1SS355TE-17			
D206	8-719-018-12	DIODE MA8330-L-TX			
D207	8-719-422-67	DIODE MA8062-H-TX			
		< FERRITE BEAD >			
FB201	1-414-135-11	FERRITE 0uH			

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Ref. No.	Part No.	Description			Remark
		< IC >			
IC201	8-759-574-86	IC M38B57MCH-E206FP			
IC202	8-759-326-78	IC PST9140NL			
		< JUMPER RESISTOR >			
JR203	1-216-296-91	SHORT	0		
JR205	1-216-296-91	SHORT	0		
JR207	1-216-296-91	SHORT	0		
JR209	1-216-296-91	SHORT	0		
JR210	1-216-296-91	SHORT	0		
JR211	1-216-296-91	SHORT	0		
JR212	1-216-296-91	SHORT	0		
JR214	1-216-296-91	SHORT	0		
JR215	1-216-296-91	SHORT	0		
JR216	1-216-296-91	SHORT	0		
JR217	1-216-296-91	SHORT	0		
JR218	1-216-295-91	SHORT	0		
JR219	1-216-295-91	SHORT	0		
JR220	1-216-296-91	SHORT	0		
JR226	1-216-295-91	SHORT	0		
JR229	1-216-296-91	SHORT	0		
JR230	1-216-296-91	SHORT	0		
JR231	1-216-296-91	SHORT	0		
JR234	1-216-295-91	SHORT	0		
JR238	1-216-295-91	SHORT	0		
JR244	1-216-296-91	SHORT	0		
JR245	1-216-295-91	SHORT	0		
JR246	1-216-295-91	SHORT	0		
JR248	1-216-295-91	SHORT	0		
JR249	1-216-296-91	SHORT	0		
		< FLUORECENT INDICATOR >			
ND201	1-517-886-11	INDICATOR TUBE, FLUORESCENT			
		< TRANSISTOR >			
Q201	8-729-804-41	TRANSISTOR 2SB1122-S			
		< RESISTOR >			
R201	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R202	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R203	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R204	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R205	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R206	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R207	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R208	1-216-077-00	METAL CHIP	15K	5%	1/10W
R209	1-216-091-00	METAL CHIP	56K	5%	1/10W
R211	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R212	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R213	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R214	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R215	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R216	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R217	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R218	1-216-077-00	METAL CHIP	15K	5%	1/10W
R221	1-208-806-11	RES, CHIP	10K	0.50%	1/10W
R222	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R223	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R224	1-216-059-00	METAL CHIP	2.7K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R229	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W
R231	1-216-025-91	RES, CHIP	100	5%	1/10W
R232	1-216-025-91	RES, CHIP	100	5%	1/10W
R233	1-216-025-91	RES, CHIP	100	5%	1/10W
R234	1-216-025-91	RES, CHIP	100	5%	1/10W
R235	1-216-025-91	RES, CHIP	100	5%	1/10W
R241	1-216-073-00	METAL CHIP	10K	5%	1/10W
R243	1-216-073-00	METAL CHIP	10K	5%	1/10W
R247	1-216-073-00	METAL CHIP	10K	5%	1/10W
R248	1-216-073-00	METAL CHIP	10K	5%	1/10W
R249	1-216-073-00	METAL CHIP	10K	5%	1/10W
R250	1-216-073-00	METAL CHIP	10K	5%	1/10W
R251	1-216-049-91	RES, CHIP	1K	5%	1/10W
R252	1-216-049-91	RES, CHIP	1K	5%	1/10W
R253	1-216-073-00	METAL CHIP	10K	5%	1/10W
R254	1-216-073-00	METAL CHIP	10K	5%	1/10W
R255	1-216-073-00	METAL CHIP	10K	5%	1/10W
R256	1-216-073-00	METAL CHIP	10K	5%	1/10W
R257	1-216-025-91	RES, CHIP	100	5%	1/10W
R258	1-216-025-91	RES, CHIP	100	5%	1/10W
R259	1-216-025-91	RES, CHIP	100	5%	1/10W
R260	1-216-025-91	RES, CHIP	100	5%	1/10W
R261	1-216-025-91	RES, CHIP	100	5%	1/10W
R262	1-216-025-91	RES, CHIP	100	5%	1/10W
R263	1-216-073-00	METAL CHIP	10K	5%	1/10W
R264	1-216-073-00	METAL CHIP	10K	5%	1/10W
R266	1-216-073-00	METAL CHIP	10K	5%	1/10W
R267	1-216-049-91	RES, CHIP	1K	5%	1/10W
R268	1-216-089-91	RES, CHIP	47K	5%	1/10W
R270	1-216-073-00	METAL CHIP	10K	5%	1/10W
R271	1-216-073-00	METAL CHIP	10K	5%	1/10W
R272	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R273	1-216-025-91	RES, CHIP	100	5%	1/10W
R274	1-216-097-91	RES, CHIP	100K	5%	1/10W
R275	1-216-073-00	METAL CHIP	10K	5%	1/10W
R276	1-216-073-00	METAL CHIP	10K	5%	1/10W
R277	1-216-073-00	METAL CHIP	10K	5%	1/10W
R278	1-216-073-00	METAL CHIP	10K	5%	1/10W
R279	1-216-073-00	METAL CHIP	10K	5%	1/10W
R280	1-216-073-00	METAL CHIP	10K	5%	1/10W
R284	1-216-073-00	METAL CHIP	10K	5%	1/10W
R286	1-216-073-00	METAL CHIP	10K	5%	1/10W
R288	1-216-073-00	METAL CHIP	10K	5%	1/10W
R289	1-216-073-00	METAL CHIP	10K	5%	1/10W
R298	1-216-025-91	RES, CHIP	100	5%	1/10W
R299	1-216-025-91	RES, CHIP	100	5%	1/10W
		< SWITCH >			
S201	1-771-349-21	SWITCH, KEYBOARD (■)			
S202	1-771-349-21	SWITCH, KEYBOARD (❚❚)			
S212	1-771-349-21	SWITCH, KEYBOARD (OPEN/CLOSE ≙)			
S213	1-771-349-21	SWITCH, KEYBOARD (▷)			
S214	1-771-349-21	SWITCH, KEYBOARD (TITLE)			
S215	1-771-349-21	SWITCH, KEYBOARD (DVD MENU)			
S216	1-771-349-21	SWITCH, KEYBOARD (RETURN)			
S217	1-771-349-21	SWITCH, KEYBOARD (SCAN ◀◀)			
S218	1-771-349-21	SWITCH, KEYBOARD (SCAN ▶▶)			
S221	1-771-349-21	SWITCH, KEYBOARD (VOCAL SELECT)			
S222	1-771-349-21	SWITCH, KEYBOARD (RESERVE)			

Ref. No.	Part No.	Description	Remark
S223	1-771-349-21	SWITCH, KEYBOARD (AUTO PAUSE)	
S224	1-771-349-21	SWITCH, KEYBOARD (KARAOKE PON)	
S230	1-475-235-21	ENCODER, ROTARY (PREV ⏮ ⏭ NEXT)	
		< VIBRATOR >	
X201	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	

Ref. No.	Part No.	Description	Remark
*	A-6065-278-A	FR-153 BOARD, COMPLETE (EXCEPT Taiwan)	
*	A-6065-284-A	FR-153 BOARD, COMPLETE (Taiwan)	
		************************	
		(Ref.No. 4,000 Series)	
		< CAPACITOR >	
C001	1-124-234-00	ELECT 22uF 20% 16V	
C002	1-137-150-11	FILM 0.01uF 5% 100V	
C003	1-115-339-11	CERAMIC CHIP 0.1uF 10% 50V	
C004	1-115-339-11	CERAMIC CHIP 0.1uF 10% 50V	
C005	1-128-131-11	ELECT 22uF 20% 50V	
C051	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
		< CONNECTOR >	
CN001	1-506-485-11	PIN, CONNECTOR 6P	
CN002	1-778-447-11	CONNECTOR, BOARD TO BOARD 13P	
		< DIODE >	
D001	8-719-041-97	DIODE MA113- (TX)	
D002	8-719-041-97	DIODE MA113- (TX)	
D003	8-719-041-97	DIODE MA113- (TX)	
D004	8-719-041-97	DIODE MA113- (TX)	
D071	8-719-064-11	DIODE SPR-325MVW (ON/STANDBY)	
		< FERRITE BEAD >	
FB001	1-414-135-11	FERRITE 0uH	
FB002	1-414-135-11	FERRITE 0uH	
FB004	1-469-324-21	FERRITE 0uH	
		< IC >	
IC051	8-749-011-22	IC GP1U27X	
		< JUMPER RESISTOR >	
JR001	1-216-296-91	SHORT 0	
JR002	1-216-295-91	SHORT 0	
JR003	1-216-295-91	SHORT 0	
		< COIL >	
L001	1-408-978-21	INDUCTOR 47uH	
		< TRANSISTOR >	
Q001	8-729-808-41	TRANSISTOR 2SD1624-S	
Q002	8-729-808-41	TRANSISTOR 2SD1624-S	
		< RESISTOR >	
R002	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R003	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R011	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R012	1-216-065-91	RES, CHIP 4.7K 5% 1/10W	
R013	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R071	1-216-047-91	RES, CHIP 820 5% 1/10W	
R072	1-216-037-00	METAL CHIP 330 5% 1/10W	
		< SWITCH >	
S071	1-771-349-21	SWITCH, KEYBOARD (I/⏻)	
S072	1-771-349-21	SWITCH, KEYBOARD (♯)	
S073	1-771-349-21	SWITCH, KEYBOARD (♮)	
S074	1-771-349-21	SWITCH, KEYBOARD (♭)	
		< TRANSFORMER >	
T001	1-433-748-11	TRANSFORMER, DC-DC CONVERTER	

Ref. No.	Part No.	Description	Remark
*	A-6065-281-A	MB-82 BOARD, COMPLETE (Chinese)	
*	A-6065-282-A	MB-82 BOARD, COMPLETE	
		(Hong Kong, Singapore)	
*	A-6065-288-A	MB-82 BOARD, COMPLETE (Taiwan)	
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		(Ref.No. 1,000 Series)	
		< CAPACITOR >	
C001	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C002	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C003	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C004	1-126-204-11	ELECT CHIP 47uF 20% 16V	
C005	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C007	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C008	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C009	1-164-230-11	CERAMIC CHIP 220PF 5% 50V	
C010	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C011	1-125-822-11	TANTALUM 10uF 20% 10V	
C012	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C013	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C015	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C016	1-125-822-11	TANTALUM 10uF 20% 10V	
C017	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C018	1-125-822-11	TANTALUM 10uF 20% 10V	
C019	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C201	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C202	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C203	1-125-822-11	TANTALUM 10uF 20% 10V	
C204	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C206	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C209	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C210	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C211	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C212	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C213	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C304	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	
C307	1-125-822-11	TANTALUM 10uF 20% 10V	
C309	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
C310	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C312	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C313	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C314	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C315	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C316	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C317	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C318	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C319	1-125-822-11	TANTALUM 10uF 20% 10V	
C320	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C321	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C322	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	

Ref. No.	Part No.	Description			Remark
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C325	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C329	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C331	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C333	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C334	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C339	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C341	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C343	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C344	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C401	1-125-822-11	TANTALUM	10uF	20%	10V
C402	1-126-209-11	ELECT CHIP	100uF	20%	4V
C403	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C404	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C405	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C408	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C413	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C414	1-125-822-11	TANTALUM	10uF	20%	10V
C415	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C418	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C422	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C425	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C426	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C428	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C431	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C432	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C433	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C434	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C436	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C438	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C439	1-125-822-11	TANTALUM	10uF	20%	10V
C440	1-125-822-11	TANTALUM	10uF	20%	10V
C441	1-126-209-11	ELECT CHIP	100uF	20%	4V
C443	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C601	1-125-822-11	TANTALUM	10uF	20%	10V
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C604	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C605	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C606	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C607	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C608	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C701	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C702	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C703	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C704	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C705	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C706	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C707	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C708	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C709	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C710	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C711	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C712	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C713	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C714	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C715	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C801	1-126-204-11	ELECT CHIP	47uF	20%	16V
C802	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C803	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C805	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C806	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C807	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C808	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C809	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C810	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C811	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C812	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C813	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C814	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C815	1-110-666-11	ELECT CHIP	22uF	20%	6.3V
C816	1-104-601-11	ELECT CHIP	10uF	20%	10V
C817	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C818	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C819	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C820	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C821	1-164-230-11	CERAMIC CHIP	220PF	5%	50V
C822	1-126-204-11	ELECT CHIP	47uF	20%	16V
C823	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C824	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C825	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C830	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C831	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C832	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C833	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C834	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C835	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C836	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C837	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C901	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C902	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C903	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C905	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C906	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C907	1-125-822-11	TANTALUM	10uF	20%	10V
C908	1-128-391-11	ELECT CHIP	330uF	20%	6.3V
C909	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C910	1-125-822-11	TANTALUM	10uF	20%	10V
C911	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C917	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C919	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C920	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C921	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C923	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
		< CONNECTOR >			
CN001	1-785-728-21	PIN (PC BOARD), CONNECTOR 7P			
CN002	1-779-936-11	CONNECTOR, FFC/FPC 18P			
CN003	1-779-936-11	CONNECTOR, FFC/FPC 18P			

Ref. No.	Part No.	Description			Remark
CN004	1-778-772-11	CONNECTOR, FFC/FPC 7P			
CN005	1-784-327-11	CONNECTOR, FFC/FPC 28P			
CN006	1-774-768-11	CONNECTOR, FFC/FPC 17P			
CN008	1-774-767-11	CONNECTOR, FFC/FPC 15P			
CN010	1-573-806-21	PIN, CONNECTOR (1.5mm) (SMD) 6P			
CN011	1-573-806-21	PIN, CONNECTOR (1.5mm) (SMD) 6P			
* CN012	1-573-768-21	PIN, CONNECTOR (1.5mm) (SMD) 5P			
		< DIODE >			
D701	8-719-988-61	DIODE 1SS355TE-17			
D801	8-719-941-09	DIODE DAP202U			
D802	8-719-988-61	DIODE 1SS355TE-17			
D803	8-719-941-09	DIODE DAP202U			
D804	8-719-941-86	DIODE DAN202U			
D805	8-719-941-86	DIODE DAN202U			
D806	8-719-988-61	DIODE 1SS355TE-17			
D807	8-719-988-61	DIODE 1SS355TE-17			
		< FERRITE BEAD >			
FB001	1-469-324-21	FERRITE	0uH		
FB002	1-469-324-21	FERRITE	0uH		
FB003	1-469-324-21	FERRITE	0uH		
FB004	1-469-324-21	FERRITE	0uH		
FB005	1-469-324-21	FERRITE	0uH		
FB006	1-469-324-21	FERRITE	0uH		
FB007	1-469-324-21	FERRITE	0uH		
FB008	1-469-324-21	FERRITE	0uH		
FB010	1-469-116-21	FERRITE	0uH		
FB011	1-469-116-21	FERRITE	0uH		
FB012	1-469-116-21	FERRITE	0uH		
FB014	1-469-116-21	FERRITE	0uH		
FB015	1-469-116-21	FERRITE	0uH		
FB016	1-216-801-11	METAL CHIP	22	5%	1/16W
FB017	1-469-116-21	FERRITE	0uH		
FB018	1-469-116-21	FERRITE	0uH		
FB019	1-469-116-21	FERRITE	0uH		
FB020	1-469-116-21	FERRITE	0uH		
FB021	1-469-116-21	FERRITE	0uH		
FB022	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB024	1-469-116-21	FERRITE	0uH		
FB026	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB028	1-469-116-21	FERRITE	0uH		
FB029	1-469-324-21	FERRITE	0uH		
FB030	1-469-116-21	FERRITE	0uH		
FB031	1-469-116-21	FERRITE	0uH		
FB032	1-469-116-21	FERRITE	0uH		
FB033	1-469-116-21	FERRITE	0uH		
FB035	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB037	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
FB039	1-500-283-11	INDUCTOR CHIP	0uH		
FB040	1-469-116-21	FERRITE	0uH		
FB042	1-500-283-11	INDUCTOR CHIP	0uH		
FB043	1-500-283-11	INDUCTOR CHIP	0uH		
FB045	1-500-283-11	INDUCTOR CHIP	0uH		
FB047	1-469-116-21	FERRITE	0uH		
FB049	1-469-116-21	FERRITE	0uH		
FB051	1-469-116-21	FERRITE	0uH		
FB053	1-500-283-11	INDUCTOR CHIP	0uH		
FB054	1-500-283-11	INDUCTOR CHIP	0uH		
FB055	1-500-283-11	INDUCTOR CHIP	0uH		
FB056	1-500-283-11	INDUCTOR CHIP	0uH		
FB058	1-500-283-11	INDUCTOR CHIP	0uH		
FB060	1-500-283-11	INDUCTOR CHIP	0uH		
FB080	1-216-801-11	METAL CHIP	22	5%	1/16W
FB081	1-216-801-11	METAL CHIP	22	5%	1/16W
FB083	1-216-801-11	METAL CHIP	22	5%	1/16W
FB084	1-216-801-11	METAL CHIP	22	5%	1/16W
FB085	1-216-801-11	METAL CHIP	22	5%	1/16W
FB087	1-216-801-11	METAL CHIP	22	5%	1/16W
FB091	1-469-116-21	FERRITE	0uH		
FB092	1-469-116-21	FERRITE	0uH		
FB093	1-469-116-21	FERRITE	0uH		
FB094	1-469-116-21	FERRITE	0uH		
FB095	1-469-116-21	FERRITE	0uH		
FB096	1-469-116-21	FERRITE	0uH		
FB097	1-469-116-21	FERRITE	0uH		
FB098	1-469-116-21	FERRITE	0uH		
FB099	1-469-116-21	FERRITE	0uH		
FB100	1-469-116-21	FERRITE	0uH		
FB101	1-469-116-21	FERRITE	0uH		
FB103	1-469-116-21	FERRITE	0uH		
FB104	1-469-116-21	FERRITE	0uH		
FB105	1-469-324-21	FERRITE	0uH		
FB106	1-469-324-21	FERRITE	0uH		
		< FILTER >			
FL001	1-234-177-21	FILTER, CHIP EMI			
FL002	1-234-177-21	FILTER, CHIP EMI			
FL003	1-233-893-21	FILTER, CHIP EMI			
FL004	1-233-893-21	FILTER, CHIP EMI			
FL005	1-234-177-21	FILTER, CHIP EMI			
FL006	1-234-177-21	FILTER, CHIP EMI			
FL008	1-234-177-21	FILTER, CHIP EMI			
FL009	1-234-177-21	FILTER, CHIP EMI			
FL010	1-234-177-21	FILTER, CHIP EMI			
FL014	1-234-177-21	FILTER, CHIP EMI			
FL015	1-234-177-21	FILTER, CHIP EMI			
FL016	1-234-177-21	FILTER, CHIP EMI			
FL202	1-234-177-21	FILTER, CHIP EMI			
FL203	1-234-177-21	FILTER, CHIP EMI			
FL204	1-234-177-21	FILTER, CHIP EMI			
FL205	1-234-177-21	FILTER, CHIP EMI			
FL301	1-234-177-21	FILTER, CHIP EMI			
FL302	1-234-177-21	FILTER, CHIP EMI			
FL303	1-234-177-21	FILTER, CHIP EMI			
FL401	1-234-177-21	FILTER, CHIP EMI			
FL402	1-234-177-21	FILTER, CHIP EMI			
FL403	1-234-177-21	FILTER, CHIP EMI			
FL404	1-234-177-21	FILTER, CHIP EMI			
FL405	1-234-177-21	FILTER, CHIP EMI			
FL601	1-234-177-21	FILTER, CHIP EMI			
FL701	1-234-177-21	FILTER, CHIP EMI			
FL901	1-234-177-21	FILTER, CHIP EMI			
		< IC >			
IC001	8-759-567-31	IC PLL1700E/2K			
IC003	8-759-531-92	IC TC7WH04FU (TE12R)			
IC004	8-759-531-92	IC TC7WH04FU (TE12R)			
IC005	8-759-486-55	IC NJM2370U33-TE2			
IC201	8-759-469-25	IC AK6440AF-E2			

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Ref. No.	Part No.	Description			Remark
IC202	8-759-599-39	IC MB91101APFV-G-BND			
IC203	8-759-580-60	IC SN74AHCT08PWR			
IC204	8-759-573-65	IC IDT71V016S20PHAU-TL			
IC205	8-759-593-84	IC MBM29LV160B-214A-20			
IC207	8-759-427-92	IC PST9126NL			
IC302	8-759-486-55	IC NJM2370U33-TE2			
IC303	8-759-567-27	IC CXD8784R			
IC304	8-759-567-35	IC KM416V1200CT-L6T			
IC401	8-752-398-60	IC CXD1930BQ			
IC402	8-759-567-34	IC KM416S1020CT-G10T			
IC403	8-759-567-34	IC KM416S1020CT-G10T			
IC404	8-759-486-55	IC NJM2370U33-TE2			
IC601	8-759-567-30	IC CXD8788Q			
IC701	8-759-567-25	IC CXD8791Q			
IC702	8-759-337-40	IC NJM2904V (TE2)			
IC801	8-759-522-13	IC BA5981FP-E2			
IC802	8-759-567-26	IC BA5983FP-E2			
IC803	8-759-338-78	IC BA10324AFV-E2			
IC901	8-752-394-92	IC CXD2725Q			
IC902	8-759-572-26	IC CXD8799N-T2			
IC904	8-759-052-52	IC L78M05T-FA			

< COIL >

Ref. No.	Part No.	Description			Remark
L001	1-414-754-11	INDUCTOR	10uH		
L402	1-414-754-11	INDUCTOR	10uH		
L903	1-414-757-11	INDUCTOR	100uH		

< TRANSISTOR >

Ref. No.	Part No.	Description			Remark
Q801	8-729-015-74	TRANSISTOR	UN5111-TX		
Q802	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q803	8-729-230-63	TRANSISTOR	2SC4116-YG		

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R001	1-216-833-91	RES, CHIP	10K	5%	1/16W
R002	1-216-833-91	RES, CHIP	10K	5%	1/16W
R003	1-216-833-91	RES, CHIP	10K	5%	1/16W
R004	1-216-821-11	METAL CHIP	1K	5%	1/16W
R005	1-216-821-11	METAL CHIP	1K	5%	1/16W
R006	1-216-821-11	METAL CHIP	1K	5%	1/16W
R007	1-216-864-11	METAL CHIP	0	5%	1/16W
R009	1-216-864-11	METAL CHIP	0	5%	1/16W
R010	1-216-801-11	METAL CHIP	22	5%	1/16W
R012	1-216-801-11	METAL CHIP	22	5%	1/16W
R014	1-216-801-11	METAL CHIP	22	5%	1/16W
R036	1-216-821-11	METAL CHIP	1K	5%	1/16W
R037	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R040	1-216-864-11	METAL CHIP	0	5%	1/16W
R044	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R045	1-216-833-91	RES, CHIP	10K	5%	1/16W
R053	1-216-833-91	RES, CHIP	10K	5%	1/16W
R202	1-216-801-11	METAL CHIP	22	5%	1/16W
R203	1-216-833-91	RES, CHIP	10K	5%	1/16W
R204	1-216-833-91	RES, CHIP	10K	5%	1/16W
R205	1-216-845-11	METAL CHIP	100K	5%	1/16W
R206	1-216-845-11	METAL CHIP	100K	5%	1/16W
R207	1-216-833-91	RES, CHIP	10K	5%	1/16W
R212	1-216-813-11	METAL CHIP	220	5%	1/16W
R213	1-216-801-11	METAL CHIP	22	5%	1/16W
R217	1-216-833-91	RES, CHIP	10K	5%	1/16W
R222	1-216-833-91	RES, CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R223	1-216-833-91	RES, CHIP	10K	5%	1/16W
R225	1-216-833-91	RES, CHIP	10K	5%	1/16W
R226	1-216-833-91	RES, CHIP	10K	5%	1/16W
R227	1-216-813-11	METAL CHIP	220	5%	1/16W
R228	1-216-813-11	METAL CHIP	220	5%	1/16W
R229	1-216-813-11	METAL CHIP	220	5%	1/16W
R230	1-216-813-11	METAL CHIP	220	5%	1/16W
R231	1-216-813-11	METAL CHIP	220	5%	1/16W
R232	1-216-813-11	METAL CHIP	220	5%	1/16W
R235	1-216-864-11	METAL CHIP	0	5%	1/16W
R237	1-216-246-00	RES, CHIP	100K	5%	1/8W
					(EXCEPT Chinese)
R238	1-216-246-00	RES, CHIP	100K	5%	1/8W
R239	1-216-220-00	RES, CHIP	8.2K	5%	1/8W
					(Chinese)
R239	1-216-238-91	RES, CHIP	47K	5%	1/8W
					(EXCEPT Chinese)
R240	1-216-246-00	RES, CHIP	100K	5%	1/8W
					(EXCEPT Chinese)
R241	1-216-246-00	RES, CHIP	100K	5%	1/8W
R305	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R306	1-218-831-11	RES, CHIP	220	0.50%	1/16W
R307	1-218-875-11	RES, CHIP	15K	0.50%	1/16W
R308	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R309	1-216-838-11	METAL CHIP	27K	5%	1/16W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R311	1-216-821-11	METAL CHIP	1K	5%	1/16W
R313	1-216-833-91	RES, CHIP	10K	5%	1/16W
R314	1-216-833-91	RES, CHIP	10K	5%	1/16W
R315	1-216-833-91	RES, CHIP	10K	5%	1/16W
R316	1-218-855-11	RES, CHIP	2.2K	0.50%	1/16W
R317	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R318	1-216-849-11	METAL CHIP	220K	5%	1/16W
R319	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R320	1-218-853-11	RES, CHIP	1.8K	0.50%	1/16W
R321	1-218-847-11	RES, CHIP	1K	0.50%	1/16W
R322	1-218-871-11	RES, CHIP	10K	0.50%	1/16W
R323	1-216-833-91	RES, CHIP	10K	5%	1/16W
R324	1-216-833-91	RES, CHIP	10K	5%	1/16W
R325	1-216-833-91	RES, CHIP	10K	5%	1/16W
R326	1-216-833-91	RES, CHIP	10K	5%	1/16W
R327	1-216-833-91	RES, CHIP	10K	5%	1/16W
R328	1-216-833-91	RES, CHIP	10K	5%	1/16W
R329	1-216-833-91	RES, CHIP	10K	5%	1/16W
R330	1-216-833-91	RES, CHIP	10K	5%	1/16W
R331	1-216-833-91	RES, CHIP	10K	5%	1/16W
R332	1-216-833-91	RES, CHIP	10K	5%	1/16W
R337	1-216-809-11	METAL CHIP	100	5%	1/16W
R338	1-216-833-91	RES, CHIP	10K	5%	1/16W
R339	1-216-833-91	RES, CHIP	10K	5%	1/16W
R340	1-216-833-91	RES, CHIP	10K	5%	1/16W
R341	1-216-809-11	METAL CHIP	100	5%	1/16W
R403	1-216-833-91	RES, CHIP	10K	5%	1/16W
R404	1-216-864-11	METAL CHIP	0	5%	1/16W
R405	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R406	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R407	1-216-833-91	RES, CHIP	10K	5%	1/16W
R409	1-216-864-11	METAL CHIP	0	5%	1/16W
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W
R411	1-216-833-91	RES, CHIP	10K	5%	1/16W
R412	1-216-809-11	METAL CHIP	100	5%	1/16W

Ref. No.	Part No.	Description			Remark
R426	1-216-813-11	METAL CHIP	220	5%	1/16W
R427	1-216-813-11	METAL CHIP	220	5%	1/16W
R428	1-216-813-11	METAL CHIP	220	5%	1/16W
R429	1-216-813-11	METAL CHIP	220	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W
R431	1-216-813-11	METAL CHIP	220	5%	1/16W
R502	1-216-806-11	RES, CHIP	56	5%	1/16W
R527	1-216-833-91	RES, CHIP	10K	5%	1/16W
R528	1-216-833-91	RES, CHIP	10K	5%	1/16W
R536	1-216-864-11	METAL CHIP	0	5%	1/16W
R538	1-216-864-11	METAL CHIP	0	5%	1/16W
R542	1-216-864-11	METAL CHIP	0	5%	1/16W
R605	1-216-833-91	RES, CHIP	10K	5%	1/16W
R606	1-216-833-91	RES, CHIP	10K	5%	1/16W
R630	1-216-833-91	RES, CHIP	10K	5%	1/16W
R631	1-216-833-91	RES, CHIP	10K	5%	1/16W
R632	1-216-833-91	RES, CHIP	10K	5%	1/16W
R633	1-216-833-91	RES, CHIP	10K	5%	1/16W
R634	1-216-833-91	RES, CHIP	10K	5%	1/16W
R635	1-216-833-91	RES, CHIP	10K	5%	1/16W
R636	1-216-815-11	METAL CHIP	330	5%	1/16W
R637	1-216-809-11	METAL CHIP	100	5%	1/16W
R638	1-216-809-11	METAL CHIP	100	5%	1/16W
R639	1-216-809-11	METAL CHIP	100	5%	1/16W
R640	1-216-809-11	METAL CHIP	100	5%	1/16W
R641	1-216-809-11	METAL CHIP	100	5%	1/16W
R642	1-216-809-11	METAL CHIP	100	5%	1/16W
R643	1-216-815-11	METAL CHIP	330	5%	1/16W
R647	1-216-833-91	RES, CHIP	10K	5%	1/16W
R701	1-216-805-11	METAL CHIP	47	5%	1/16W
R702	1-216-817-11	METAL CHIP	470	5%	1/16W
R703	1-216-817-11	METAL CHIP	470	5%	1/16W
R704	1-216-817-11	METAL CHIP	470	5%	1/16W
R705	1-216-817-11	METAL CHIP	470	5%	1/16W
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W
R707	1-216-844-11	METAL CHIP	82K	5%	1/16W
R708	1-216-844-11	METAL CHIP	82K	5%	1/16W
R709	1-216-844-11	METAL CHIP	82K	5%	1/16W
R710	1-216-844-11	METAL CHIP	82K	5%	1/16W
R711	1-216-833-91	RES, CHIP	10K	5%	1/16W
R712	1-216-839-11	METAL CHIP	33K	5%	1/16W
R720	1-216-821-11	METAL CHIP	1K	5%	1/16W
R721	1-216-821-11	METAL CHIP	1K	5%	1/16W
R722	1-216-801-11	METAL CHIP	22	5%	1/16W
R748	1-216-833-91	RES, CHIP	10K	5%	1/16W
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W
R752	1-216-821-11	METAL CHIP	1K	5%	1/16W
R755	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R757	1-216-864-11	METAL CHIP	0	5%	1/16W
R758	1-216-864-11	METAL CHIP	0	5%	1/16W
R801	1-216-841-11	METAL CHIP	47K	5%	1/16W
R802	1-216-841-11	METAL CHIP	47K	5%	1/16W
R803	1-216-841-11	METAL CHIP	47K	5%	1/16W
R804	1-216-841-11	METAL CHIP	47K	5%	1/16W
R805	1-216-840-11	METAL CHIP	39K	5%	1/16W
R806	1-216-840-11	METAL CHIP	39K	5%	1/16W
R807	1-216-835-11	METAL CHIP	15K	5%	1/16W
R808	1-216-835-11	METAL CHIP	15K	5%	1/16W
R809	1-216-844-11	METAL CHIP	82K	5%	1/16W
R810	1-216-844-11	METAL CHIP	82K	5%	1/16W
R811	1-218-907-11	RES, CHIP	330K	0.50%	1/16W
R812	1-218-895-11	RES, CHIP	100K	0.50%	1/16W
R813	1-218-895-11	RES, CHIP	100K	0.50%	1/16W
R814	1-218-907-11	RES, CHIP	330K	0.50%	1/16W
R815	1-216-836-11	METAL CHIP	18K	5%	1/16W
R816	1-216-845-11	METAL CHIP	100K	5%	1/16W
R817	1-216-852-11	METAL CHIP	390K	5%	1/16W
R818	1-216-852-11	METAL CHIP	390K	5%	1/16W
R819	1-216-849-11	METAL CHIP	220K	5%	1/16W
R820	1-216-851-11	METAL CHIP	330K	5%	1/16W
R821	1-216-840-11	METAL CHIP	39K	5%	1/16W
R822	1-216-845-11	METAL CHIP	100K	5%	1/16W
R823	1-216-833-91	RES, CHIP	10K	5%	1/16W
R824	1-216-833-91	RES, CHIP	10K	5%	1/16W
R825	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R826	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R827	1-216-851-11	METAL CHIP	330K	5%	1/16W
R828	1-216-837-11	METAL CHIP	22K	5%	1/16W
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W
R831	1-216-833-91	RES, CHIP	10K	5%	1/16W
R832	1-216-833-91	RES, CHIP	10K	5%	1/16W
R834	1-216-847-11	METAL CHIP	150K	5%	1/16W
R835	1-216-847-11	METAL CHIP	150K	5%	1/16W
R836	1-216-847-11	METAL CHIP	150K	5%	1/16W
R837	1-216-844-11	METAL CHIP	82K	5%	1/16W
R838	1-216-848-11	METAL CHIP	180K	5%	1/16W
R839	1-216-848-11	METAL CHIP	180K	5%	1/16W
R840	1-216-848-11	METAL CHIP	180K	5%	1/16W
R841	1-216-843-11	METAL CHIP	68K	5%	1/16W
R842	1-216-844-11	METAL CHIP	82K	5%	1/16W
R843	1-216-844-11	METAL CHIP	82K	5%	1/16W
R844	1-216-843-11	METAL CHIP	68K	5%	1/16W
R845	1-216-843-11	METAL CHIP	68K	5%	1/16W
R846	1-216-841-11	METAL CHIP	47K	5%	1/16W
R847	1-216-296-91	SHORT	0		
R851	1-216-833-91	RES, CHIP	10K	5%	1/16W
R852	1-216-833-91	RES, CHIP	10K	5%	1/16W
R853	1-216-833-91	RES, CHIP	10K	5%	1/16W
R854	1-216-833-91	RES, CHIP	10K	5%	1/16W
R855	1-216-834-11	METAL CHIP	12K	5%	1/16W
R856	1-216-836-11	METAL CHIP	18K	5%	1/16W
R857	1-218-899-11	RES, CHIP	150K	0.50%	1/16W
R858	1-218-899-11	RES, CHIP	150K	0.50%	1/16W
R859	1-218-889-11	RES, CHIP	56K	0.50%	1/16W
R860	1-218-889-11	RES, CHIP	56K	0.50%	1/16W
R861	1-216-296-91	SHORT	0		
R864	1-216-138-00	METAL CHIP	3.3	5%	1/8W
R865	1-216-833-91	RES, CHIP	10K	5%	1/16W
R866	1-216-833-91	RES, CHIP	10K	5%	1/16W
R867	1-216-833-91	RES, CHIP	10K	5%	1/16W
R868	1-216-833-91	RES, CHIP	10K	5%	1/16W
R869	1-216-833-91	RES, CHIP	10K	5%	1/16W
R870	1-216-815-11	METAL CHIP	330	5%	1/16W
R871	1-216-817-11	METAL CHIP	470	5%	1/16W
R872	1-216-815-11	METAL CHIP	330	5%	1/16W
R873	1-216-821-11	METAL CHIP	1K	5%	1/16W
R901	1-216-809-11	METAL CHIP	100	5%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R904	1-216-864-11	METAL CHIP	0	5%	1/16W
R905	1-216-821-11	METAL CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R907	1-216-864-11	METAL CHIP	0	5%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R919	1-216-857-11	METAL CHIP	1M	5%	1/16W
R920	1-216-839-11	METAL CHIP	33K	5%	1/16W
R921	1-216-835-11	METAL CHIP	15K	5%	1/16W
R923	1-216-837-11	METAL CHIP	22K	5%	1/16W
R925	1-216-864-11	METAL CHIP	0	5%	1/16W
R926	1-216-864-11	METAL CHIP	0	5%	1/16W
R931	1-216-864-11	METAL CHIP	0	5%	1/16W
R932	1-216-864-11	METAL CHIP	0	5%	1/16W
R933	1-216-833-91	RES, CHIP	10K	5%	1/16W
R935	1-216-833-91	RES, CHIP	10K	5%	1/16W
R936	1-216-833-91	RES, CHIP	10K	5%	1/16W
R938	1-216-864-11	METAL CHIP	0	5%	1/16W
R945	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
		< CONPOSITION CIRCUIT BLOCK >			
* RB201	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB202	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB203	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB204	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB402	1-233-270-11	NETWORK, RES (8 GANG) 10K			
* RB601	1-233-270-11	NETWORK, RES (8 GANG) 10K			
		< VARIABLE RESISTOR >			
RV401	1-223-583-11	RES, ADJ, CARBON 1K			
		< VIBRATOR >			
X001	1-781-308-21	OSCILLATOR, CRYSTAL (27MHz)			
X201	1-781-185-21	VIBRATOR, CERAMIC (12.5MHz)			
*	A-6065-279-A	MC-121 BOARD, COMPLETE (EXCEPT Taiwan)			
*	A-6065-285-A	MC-121 BOARD, COMPLETE (Taiwan)			
		***********************			
					(Ref.No. 2,000 Series)
		< CAPACITOR >			
C102	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C106	1-128-551-11	ELECT	22uF	20%	25V
C107	1-128-551-11	ELECT	22uF	20%	25V
C109	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C111	1-126-961-11	ELECT	2.2uF	20%	50V
C114	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C115	1-163-275-11	CERAMIC CHIP	0.001uF	5%	50V
C118	1-126-961-11	ELECT	2.2uF	20%	50V
C119	1-104-664-11	ELECT	47uF	20%	16V
C121	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C124	1-104-664-11	ELECT	47uF	20%	16V
C129	1-126-964-11	ELECT	10uF	20%	50V
C130	1-126-964-11	ELECT	10uF	20%	50V
C132	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C134	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C135	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
CN101	1-784-448-11	CONNECTOR, FFC/FPC 6P			
		< DIODE >			
D103	8-719-056-82	DIODE UDZ-TE-17-6.2B			
D104	8-719-056-82	DIODE UDZ-TE-17-6.2B			
D105	8-719-800-76	DIODE 1SS226			
D106	8-719-800-76	DIODE 1SS226			
		< FERRITE BEAD >			
FB103	1-414-135-11	FERRITE	0uH		
FB104	1-414-135-11	FERRITE	0uH		
FB105	1-414-135-11	FERRITE	0uH		
FB106	1-414-135-11	FERRITE	0uH		
FB107	1-414-135-11	FERRITE	0uH		
FB108	1-414-135-11	FERRITE	0uH		
FB109	1-414-135-11	FERRITE	0uH		
FB110	1-414-135-11	FERRITE	0uH		
FB111	1-414-135-11	FERRITE	0uH		
FB112	1-414-135-11	FERRITE	0uH		
		< IC >			
IC102	8-759-369-74	IC NJM4556AM-TE2			
		< JACK >			
J101	1-563-988-21	JACK, LARGE TYPE 2P (MIC 1/MIC 2)			
		< JUMPER RESISTOR >			
JR101	1-216-295-91	SHORT	0		
JR102	1-216-296-91	SHORT	0		
JR103	1-216-296-91	SHORT	0		
JR104	1-216-296-91	SHORT	0		
JR105	1-216-296-91	SHORT	0		
		< RESISTOR >			
R104	1-216-025-91	RES, CHIP	100	5%	1/10W
R106	1-216-025-91	RES, CHIP	100	5%	1/10W
R107	1-216-077-00	METAL CHIP	15K	5%	1/10W
R108	1-216-077-00	METAL CHIP	15K	5%	1/10W
R121	1-216-097-91	RES, CHIP	100K	5%	1/10W
R122	1-216-097-91	RES, CHIP	100K	5%	1/10W
R126	1-216-097-91	RES, CHIP	100K	5%	1/10W
R127	1-216-097-91	RES, CHIP	100K	5%	1/10W
R129	1-216-049-91	RES, CHIP	1K	5%	1/10W
R131	1-216-089-91	RES, CHIP	47K	5%	1/10W
R133	1-216-049-91	RES, CHIP	1K	5%	1/10W
R136	1-216-089-91	RES, CHIP	47K	5%	1/10W
R142	1-216-025-91	RES, CHIP	100	5%	1/10W
R143	1-216-025-91	RES, CHIP	100	5%	1/10W
R144	1-216-109-00	METAL CHIP	330K	5%	1/10W
R145	1-216-109-00	METAL CHIP	330K	5%	1/10W
*	A-6066-012-A	MS-29 BOARD, COMPLETE (Taiwan)			
*	A-6066-013-A	MS-46 BOARD, COMPLETE (EXCEPT Taiwan)			
		*********************			
					(Ref.No. 3,000 Series)
		< CONNECTOR >			
CN001	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P			
		< SWITCH >			
S001	1-771-562-11	SWITCH, LEVER (TRAY SENSOR)			

Ref. No.	Part No.	Description	Remark
S002	1-762-386-11	SWITCH, PUSH (CHUCK SENSOR)	

Ref. No.	Part No.	Description	Remark
*	1-468-359-11	POWER BLOCK (HS-030SH) (EXCEPT Taiwan)	
*	1-468-359-31	POWER BLOCK (HS-030SU) (Taiwan)	
		***********************	
			(Ref.No. 6,000 Series)
		< CAPACITOR >	
C110	9-884-088-01	ELECT 56uF	400V (HS-030SH)
C110	9-884-096-01	ELECT 220uF	200V (HS-030SU)
C131	1-126-964-11	ELECT 10uF	50V
C132	1-126-960-11	ELECT 1uF	50V
C186	1-107-967-11	ELECT 1uF	400V
C211	1-111-087-11	ELECT 330uF	35V
C213	1-126-947-11	ELECT 47uF	35V
C301	1-126-960-11	ELECT 1uF	50V
C311	1-111-087-11	ELECT 330uF	35V
C313	1-126-947-11	ELECT 47uF	35V
C401	1-126-948-11	ELECT 100uF	35V
C402	1-126-960-11	ELECT 1uF	50V
C511	1-126-942-11	ELECT 1000uF	25V
C512	1-126-947-11	ELECT 47uF	35V
C611	1-111-090-11	ELECT 560uF	35V
C613	1-126-947-11	ELECT 47uF	35V
		< DIODE >	
D101	9-884-089-01	DIODE S1WBA60	
D102	8-719-160-68	DIODE RD18FB2 (HS-030SH)	
D104	8-719-109-63	DIODE RD3.0ESB2 (HS-030SU)	
D104	8-719-109-57	DIODE RD2.4ESB2 (HS-030SH)	
D105	9-980-073-01	DIODE 1SS270A	
D131	9-980-073-01	DIODE 1SS270A	
D132	9-980-073-01	DIODE 1SS270A	
D133	8-719-109-60	DIODE RD2.7ESB2	
D135	9-980-073-01	DIODE 1SS270A	
D182	8-719-109-60	DIODE RD2.7ESB2	
D183	9-980-073-01	DIODE 1SS270A	
D184	9-880-435-01	DIODE D1N60	
D185	8-719-160-68	DIODE RD18FB2 (HS-030SH)	
D211	8-719-027-43	DIODE S2L20U	
D212	8-719-160-78	DIODE RD24FB2	
D311	8-719-200-59	DIODE 21DQ04	
D401	8-719-210-21	DIODE 11EQS04	
D402	8-719-110-02	DIODE RD7.5ESB1	
D511	8-719-027-43	DIODE S2L20U	
D611	8-719-500-50	DIODE D3S4M	
		< FUSE >	
⚠F101	1-532-503-31	FUSE (1.6A/250V)	
		< IC >	
IC301	8-759-420-19	IC AN1431T	
IC401	8-759-420-19	IC AN1431T	
		< IC LINK >	
⚠P211	1-533-588-11	IC LINK 500mA	
⚠P311	1-533-593-11	IC LINK 2A	
⚠P511	1-533-589-11	IC LINK 750mA	
⚠P611	9-884-090-01	IC LINK 1.5A	
		< PHOTO COUPLER >	
⚠PC101	8-749-010-59	PHOTO COUPLER TLP721F	
⚠PC102	8-749-010-59	PHOTO COUPLER TLP721F	
⚠PC103	8-749-010-59	PHOTO COUPLER TLP721F	
		< TRANSISTOR >	
Q101	9-880-437-01	TRANSISTOR 2SK2798 (HS-030SU)	
Q101	9-880-450-01	TRANSISTOR 2SK2333 (HS-030SH)	
Q102	8-729-023-98	TRANSISTOR 2SC3377	
Q103	9-880-437-01	TRANSISTOR 2SK2798 (HS-030SU)	
Q103	9-880-450-01	TRANSISTOR 2SK2333 (HS-030SH)	
Q131	8-729-023-98	TRANSISTOR 2SC3377	
Q181	8-729-046-40	TRANSISTOR 2SK2663 (HS-030SH)	
Q181	9-884-097-01	TRANSISTOR 2SK2178 (HS-030SU)	
Q182	8-729-023-98	TRANSISTOR 2SC3377	
Q183	8-729-046-40	TRANSISTOR 2SK2663 (HS-030SH)	
Q183	9-884-097-01	TRANSISTOR 2SK2178 (HS-030SU)	
		< RESISTOR >	
R152	1-219-121-21	FUSIBLE 0.22	1/4W F
		< TRANSFORMER >	
⚠T101	9-884-094-01	TRANSFORMER OM-98023 (HS-030SU)	
⚠T101	9-884-091-01	TRANSFORMER OM-98024 (HS-030SH)	
⚠T102	9-884-095-01	TRANSFORMER OM-98059 (HS-030SU)	
⚠T102	9-884-092-01	TRANSFORMER OM-98060 (HS-030SH)	

Ref. No.	Part No.	Description	Remark
*	A-6065-275-A	TK-51 BOARD, COMPLETE (EXCEPT Taiwan)	
*	A-6065-289-A	TK-51 BOARD, COMPLETE (Taiwan)	
		**********************	
			(Ref.No. 2,000 Series)
		< CAPACITOR >	
C004	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C005	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C006	1-124-779-00	ELECT CHIP 10uF 20%	16V
C007	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C008	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C009	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C010	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C011	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C012	1-124-779-00	ELECT CHIP 10uF 20%	16V
C013	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C014	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C015	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C016	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C017	1-164-172-11	CERAMIC CHIP 0.0056uF 10%	25V
C018	1-164-739-11	CERAMIC CHIP 560PF 5%	50V
C019	1-164-172-11	CERAMIC CHIP 0.0056uF 10%	25V
C020	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C021	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C022	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C023	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C024	1-164-730-11	CERAMIC CHIP	0.0012uF	10%	50V
C025	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C026	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C027	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C028	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C029	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C030	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C031	1-124-779-00	ELECT CHIP	10uF	20%	16V
C032	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C033	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C034	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C035	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C036	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C037	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C038	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C039	1-107-826-91	CERAMIC CHIP	0.1uF	10%	16V
C040	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C041	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
		< CONNECTOR >			
CN001	1-785-700-21	CONNECTOR, FPC (ZIF) 23P			
CN002	1-566-529-11	CONNECTOR, FPC (ZIF) 13P			
CN003	1-785-699-21	CONNECTOR, FFC/FPC 18P			
CN004	1-785-699-21	CONNECTOR, FFC/FPC 18P			
		< DIODE >			
D003	8-719-988-61	DIODE 1SS355TE-17			
		< IC >			
IC001	8-759-567-24	IC SSI33P3722			
		< COIL >			
L001	1-412-031-11	INDUCTOR CHIP 47uH			
		< TRANSISTOR >			
Q001	8-729-903-46	TRANSISTOR 2SB1132-T100-QR			
Q002	8-729-015-76	TRANSISTOR UN5211-TX			
		< RESISTOR >			
R001	1-216-815-11	METAL CHIP	330	5%	1/16W
R002	1-216-809-11	METAL CHIP	100	5%	1/16W
R003	1-216-809-11	METAL CHIP	100	5%	1/16W
R004	1-216-837-11	METAL CHIP	22K	5%	1/16W
R005	1-216-013-00	METAL CHIP	33	5%	1/10W
R006	1-216-013-00	METAL CHIP	33	5%	1/10W
R007	1-216-841-11	METAL CHIP	47K	5%	1/16W
R008	1-216-797-11	METAL CHIP	10	5%	1/16W
R009	1-216-834-11	METAL CHIP	12K	5%	1/16W
R010	1-216-833-91	RES, CHIP	10K	5%	1/16W
R012	1-216-864-11	METAL CHIP	0	5%	1/16W
R014	1-216-864-11	METAL CHIP	0	5%	1/16W
R015	1-216-833-91	RES, CHIP	10K	5%	1/16W
R016	1-216-833-91	RES, CHIP	10K	5%	1/16W
R017	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R018	1-216-833-91	RES, CHIP	10K	5%	1/16W
R022	1-216-811-11	METAL CHIP	150	5%	1/16W
R023	1-216-820-11	METAL CHIP	820	5%	1/16W
R025	1-216-813-11	METAL CHIP	220	5%	1/16W
R026	1-216-864-11	METAL CHIP	0	5%	1/16W
R029	1-216-861-11	METAL CHIP	2.2M	5%	1/16W

Ref. No.	Part No.	Description			Remark
*	A-6065-280-A	VR-71 BOARD, COMPLETE (EXCEPT Taiwan)			
*	A-6065-286-A	VR-71 BOARD, COMPLETE (Taiwan)			
		***********************			
		(Ref.No. 2,000 Series)			
		< CAPACITOR >			
C835	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C836	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C838	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C840	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C844	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C845	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C846	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C847	1-104-664-11	ELECT	47uF	20%	25V
C848	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN841	1-784-448-11	CONNECTOR, FFC/FPC 6P			
CN842	1-506-485-11	PIN, CONNECTOR 6P			
		< IC >			
IC804	8-759-909-71	IC BA4558F			
IC806	8-759-909-71	IC BA4558F			
		< JUMPER RESISTOR >			
JR801	1-216-296-91	SHORT	0		
		< RESISTOR >			
R849	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R861	1-216-065-91	RES, CHIP	4.7K	5%	1/10W
R864	1-216-073-00	METAL CHIP	10K	5%	1/10W
R867	1-216-073-00	METAL CHIP	10K	5%	1/10W
R879	1-216-049-91	RES, CHIP	1K	5%	1/10W
R880	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R882	1-216-073-00	METAL CHIP	10K	5%	1/10W
R885	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R886	1-216-037-00	METAL CHIP	330	5%	1/10W
R887	1-216-073-00	METAL CHIP	10K	5%	1/10W
R888	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VARIABLE RESISTOR >			
RV801	1-225-737-11	RES, VAR, CARBON 50K (MIC 1 LEVEL)			
RV802	1-225-737-11	RES, VAR, CARBON 50K (MIC 2 LEVEL)			
RV803	1-225-737-11	RES, VAR, CARBON 50K (ECHO LEVEL)			

Ref. No.	Part No.	Description
		MISCELLANEOUS
		**************
117	1-771-564-11	SWITCH, TACTILE
122	1-790-170-11	CABLE, FLEXIBLE FLAT (FVM-10)
127	1-790-167-11	CABLE, FLEXIBLE FLAT (FMF-35)
153	1-790-166-11	CABLE, FLEXIBLE FLAT (FMT-25)
154	1-790-163-11	CABLE, FLEXIBLE FLAT (FMA-7)
155	1-790-169-11	CABLE, FLEXIBLE FLAT (FMA-10)
156	1-790-165-11	CABLE, FLEXIBLE FLAT (FMA-9)

Ref. No.	Part No.	Description	Remark
⚠161	1-769-744-91	CORD, POWER (Singapore, Hong Kong)	
⚠161	1-782-510-11	CORD, POWER (Chinese)	
⚠161	1-790-380-11	CORD, POWER (Taiwan)	
⚠220	8-820-081-03	OPTICAL PICK-UP KHM-220AAA/J1RP	
M001	1-541-632-11	MOTOR, DC (LOADING)	

ACCESSORIES & PACKING MATERIALS
****

Ref. No.	Part No.	Description	Remark
	1-418-320-51	COMMANDER, STANDARD (RMT-D108E)	
	1-575-334-11	CORD, CONNECTION (STEREO AV CABLE 1.5m)	
	1-575-335-21	CORD, CONNECTION (S-VIDEO CABLE 1.5m)	
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (Hong Kong)	
	3-053-633-01	COVER, BATTERY (for RMT-D108E)	
	3-866-505-11	MANUAL, INSTRUCTION (ENGLISH) (EXCEPT Taiwan)	
	3-866-505-21	MANUAL, INSTRUCTION (SIMPLIFIED CHINESE) (Hong Kong)	
	3-866-505-31	MANUAL, INSTRUCTION (CORRECT CHINESE) (Singapore, Chinese)	
	3-866-759-11	MANUAL, INSTRUCTION (ENGLISH) (Taiwan)	
	3-866-759-21	MANUAL, INSTRUCTION (SIMPLIFIED CHINESE) (Taiwan)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

9-921-723-11

Sony Corporation
Home Video Company

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